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CORRECTIVE ACTION PLAN

Circle K Store No. 2705426

8510 Gravenstein Highway
Cotati, California

March 8, 2005

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Circle K Store No. 2705426
8510 Gravenstein Highway
Cotati, California

SECOR Project No.: 77CP. 65426.01.0002

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March 8, 2005

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1.0 INTRODUCTION

SECOR International Incorporated (SECOR) has prepared this Corrective Action Plan (CAP) on behalf of ConocoPhillips, for Circle K Store 2705426, 8510 Gravenstein Highway, Cotati, California (Figure 1).

This CAP has been prepared to evaluate potential remedial alternatives and to propose a cost-effective, viable, remedial approach for reaching final cleanup objectives for hydrocarbon impacted soil and groundwater at and in the vicinity of the site.

This CAP includes the following Sections:

- Section 1.0 includes this introduction;
- Section 2.0 provides background information for the site, describes soil and groundwater investigations at the site, and a summary of other site activities;
- Section 3.0 describes the geology of the site;
- Section 4.0 summarizes the extent of petroleum hydrocarbon contamination;
- Section 5.0 describes the feasibility study, aquifer testing and dual phase extraction testing completed at the site;
- Section 6.0 provides an evaluation of alternatives for remediation of petroleum hydrocarbons in soil and groundwater;
- Section 7.0 describes the corrective action implementation, including schedule;
- Section 8.0 presents a list of references.

2.0 BACKGROUND

The site is an active Circle K Store and Service Station located on the southeast corner of the intersection of Gravenstein Highway and Redwood Drive in Cotati, California. Six wells (MW-2, MW-6 through MW-9, and OW) are currently monitored on a quarterly basis at the site. In addition, joint groundwater monitoring has been performed including monitoring ten additional wells at the adjacent ARCO facility.

2.1 Previous Environmental Work

Five groundwater monitoring wells (MW-1 through MW-5) were installed at the site to depths of 25 feet below ground surface (bgs) as part of an environmental assessment performed by IT Corporation in 1991. MW-1 and MW-3 through MW-5 were destroyed during the 1994 over-excavation activities. Table 1 summarizes available well construction information and well locations are shown on Figure 2. The 1991 report summarizing these events was not available for review by SECOR.

From October 11-14, 1993, Randall and Sons Construction (R&S) removed five steel underground storage tanks (UST) from the site. Total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd), as well as benzene, toluene, ethylbenzene, and xylenes (collectively "BTEX compounds") were detected in confirmatory soil samples collected from the sidewalls of the UST excavation. Table 2 summarizes soil analytical results and Figure 3 shows the locations of confirmation soil samples. We note that sample 1101-10 is listed in historical tables but the location was not shown on historical figures. R&S subsequently over-excavated approximately 400 cubic yards (cy) of hydrocarbon-impacted soil on November 5, 1993. Confirmatory soil samples collected from the sidewalls of the over-excavation area indicated residual hydrocarbon impact remained in the northwestern portion of the excavation.

During October 1994, R&S performed additional over-excavation of approximately 200 cy of soil from the northwestern portion of the initial excavation. TPHd was detected at 65 parts per million (ppm) in a confirmatory soil sample collected from the newly-exposed sidewall in the northwestern portion of the over-excavation. Other analytes were non-detectable.

In December, 1996, Innovative Technical Solutions, Inc. (ITSI) performed a Sensitive Environmental Receptor Survey. The survey included a description of structures, utilities, surface waters, and water supply wells within a 750-foot radius of the site. The utility survey identified sanitary sewer lines, water lines and storm drains near the site. Surface waters identified included seasonal standing water and a culvert. No water supply wells were identified by the study.

Four groundwater monitoring wells (MW-6 through MW-9) and one UST cavity observation well (OW) were installed at the locations depicted on attached Figure 2, subsequent to over-excavation activities. MW-6, MW-7 and MW-8 were installed in January 1996 and MW-9 was installed in April 1997 (Table 1). Four soil borings, SB-1 through SB-4, were also advanced in January 1996 (Table 1). Groundwater monitoring has been on going since January 1996. Historical groundwater analytical results indicate the continued

presence of TPHg, TPHd, BTEX compounds, and methyl tertiary butyl ether (MtBE) in groundwater beneath the site, particularly in the northwestern (downgradient) portion of the site.

In December 1999, SECOR submitted a Remedial Alternative Feasibility Study (FS) to the Sonoma County Department of Health Services (SCDHS). After a review of five remedial alternatives, the FS recommended chemical oxidation as a technically feasible, cost-effective remedial technology for the site. The objective of chemical oxidation treatment was to oxidize BTEX compounds, MtBE, TPHg, and TPHd present in groundwater and aquifer sediments in the impacted areas of the site and vicinity. The FS recommended use of a chemical oxidation treatment called Fenton's reagent (hydrogen peroxide, sulfuric acid, and ferrous iron).

In October 2000, SECOR submitted the results of a well survey conducted within a 1,900-foot radius of the site as requested by the SCDHS. Thirteen wells (eleven of which are used for domestic and/or irrigation water supply purposes) were located within the 1,900-foot search radius around the site. The site was found to fulfill the State Water Resources Control Board (SWRCB) guidelines for a Priority Class A site, due to the presence of dissolved MtBE in groundwater exceeding 10,000 parts per billion (ppb), and a water supply well within 1,900 feet of the site.

On July 11 through 13, 2001, SECOR supervised the installation of eight continuous-core soil borings (GP-1 through GP-6 and GP-8 and GP-9). Groundwater was encountered in the borings at approximately 19 to 21 feet bgs. A distinct deeper aquifer was not encountered. MtBE was detected in soil from one of the borings (GP-1) at a maximum concentration of 0.014 ppm. MtBE was detected in groundwater samples collected from each of the 8 borings at a maximum concentration of 14 ppm, but other fuel oxygenates were not detected in groundwater.

SECOR's August 28, 2001 *Soil and Water Investigation Report*, prepared on behalf of Tosco, recommended that an aquifer test be performed at the site. A letter from the SCDHS, dated October 8, 2001, concurred with that recommendation.

On May 17, 2002, SECOR supervised the installation of monitoring well MW-10 (Figure 2) to a depth of 30 feet bgs and subsurface soil samples were collected every five feet. Select soil samples were analyzed for TPHg, BTEX, and fuel oxygenates. The maximum reported concentrations in soil samples were 3.1 milligrams per kilogram (mg/kg) TPHg, 0.0081 mg/kg ethylbenzene, 0.0091 mg/kg xylenes, and 730,000 mg/kg MtBE (via Method 8260). A post-development groundwater sample collected from MW-10 contained 230 micrograms per kilogram (µg/L) ethylbenzene, 180 µg/L xylenes, and 5,000 µg/L MtBE. After MW-10 was installed, a pump test was conducted using MW-10 as the pumping well and MW-2, MW-7, MW-8, MW-9, and OW as observation wells. Estimated aquifer parameters for pumping well MW-10 were as follows:

- transmisissivity: 74.4 ft^2/day
- conductivity: 3.9 ft/day
- zone of influence: 161.7 feet

During May, 2002, SECOR conducted a dual phase extraction (DPE) pilot test using well MW-10. DPE was performed using a 20-horsepower liquid ring vacuum pump connected to a H2 Oil Recovery Systems, Inc. thermal oxidizer unit. The pilot test time was approximately 33 hours. During the DPE test, approximately 24 pounds of TPHg and 0.07 pounds of MtBE were extracted. The estimated radius of influence for MW-10 was 26 feet.

On August 14, 2003 SECOR submitted a Workplan to the SCDHS to perform weekly groundwater extraction from well OW because it was determined to be more efficient than the previously proposed extraction from MW-10.

Construction details for site related soil borings and wells are summarized in Table 1. Borelogs for soil borings and wells are located in Appendix A. Historical soil and groundwater analytical data are summarized in Tables 2 and 3. Historical boring and sampling locations are shown on Figures 2 and 3.

2.2 Groundwater Monitoring

Groundwater monitoring and sampling has been performed quarterly (four times per year) at the site since 1st quarter 1997. Currently, 6 wells are monitored (MW-2, MW-6 through MW-9, and OW) and analyzed for TPHg, BTEX and MtBE.

The quarterly monitoring report for the most recent monitoring event, 2nd quarter, 2004 (Q2/04) is included in Appendix B. Current monitoring data indicate that the groundwater table beneath Circle K Store No. 2705426 is located at approximately 8-10 feet bgs. Groundwater elevations are approximately 93 feet above mean sea level (msl). Groundwater flow is to the northeast and flow gradient is approximately 0.01 feet per foot. During Q2/04 total purgable petroleum hydrocarbons (TPPH) was detected in MW-2 (1700 µg/L), MW-6 (110 µg/L), MW-7 (5800 µg/L), MW-8 (76 µg/L), MW-9 (1100 µg/L) and OW (1100 µg/L). Benzene was detected in MW-2 (350 µg/L), MW-7 (77 µg/L), and OW (48 µg/L). Toluene was detected in MW-6 (3.3 µg/L) and OW (3.4 µg/L). Ethylbenzene was detected in MW-2 (7.9 µg/L), MW-7 (90 µg/L), MW-9 (5.8 µg/L) and OW (8.9 µg/L). Xylene was detected in MW-2 (47 µg/L), MW-7 (24 µg/L), MW-9 (2.3 µg/L), and OW (34 µg/L). MtBE was detected in MW-2 (390 µg/L), MW-6 (16 µg/L), MW-7 (700µg/L), MW-8 (99 µg/L), MW-9 (26 µg/L) and OW (180 µg/L).

2.3 Sensitive Receptor Surveys

In January 1997, ITSI conducted a Sensitive Environmental Receptor Survey within a 750-foot radius of the site. The survey described the various structures within the search radius. It also described surface water conditions within the search radius. ITSI contacted the City of Cotati Building and Planning Department (CCBPD) to obtain utility maps of the area. The maps included sanitary sewer lines, water lines and storm drain lines. The figures included with available versions of the ITSI report (pdf file) are of poor quality but are included in Appendix C. The Department of Water Resources (DWR) was also contacted to see if there were any water supply wells within the search radius. Apparently, DWR redirected ITSI to the Sonoma County Permit and Resource Management Department (SCPRMD). The SCPRMD indicated that there were no permitted water wells within the

search radius. Water supply wells constructed prior to 1973 were not required to be permitted. ITSI contacted the CCBPD to obtain a list of addresses that were not receiving the city water supply and no such addresses were located within the search radius.

In October 2000, SECOR conducted a Well Survey within a 1900 foot radius of the site. SECOR contacted DWR and obtained Well Completion Reports for 17 wells located within the search radius (Table 4). Thirteen are domestic wells, one is an irrigation well, one is an oil test well and two are of unknown use (Figure 4). Appendix C provides the report of findings for both the ITSI and SECOR sensitive receptor surveys.

3.0 GEOLOGY

The site is located approximately 50 miles north of San Francisco, California at an elevation of approximately 100 feet above msl. The site and vicinity consist of generally flat topography with hills to the south reaching elevations of approximately 400 feet above msl. The site lies within the Santa Rosa Plain. Surface geology consists primarily of alluvial fan deposits. The site and vicinity are underlain by Pleistocene to Holocene alluvial fan deposits consisting of fine sand, silt, silty clay, course sand and gravel, with gravel more abundant near the heads of fans. The east-west trending Sebastopol Fault is located approximately 0.4 miles north of the site (Innovative Technical Solutions, 1996).

Two geologic cross sections developed for the site and its vicinity are presented as Figures 5 and 6. The cross sections are based on available soil boring logs, which are provided in Appendix A. As shown on the cross section, the subsurface generally consists of silty sand or sand with silt to approximately 5 to 15 feet bgs and clay and silt with variable amounts of sand and gravel to the total depth explored (approximately 45 feet bgs). Laterally discontinuous clean sand and gravel layers, which are <1 to 3 feet thick are present locally, predominantly at depths greater than 15 feet bgs.

4.0 EXTENT OF PETROLEUM HYDROCARBONS

Soil and groundwater analytical data collected from borings at the site are presented in Tables 2 and 3. Analytical data from the most recent quarterly groundwater monitoring event (Q2/04) are presented in Appendix B.

4.1 Extent of Petroleum Hydrocarbons in Soil

Based upon historical soil samples collected during various phases of soil investigation (Table 2), it appears that the highest petroleum hydrocarbon concentrations in soil are located in the upper saturated zone and capillary fringe. The highest concentrations of TPHg, TPHd and BTEX were detected in samples collected from GP-8, SB-3, MW-3 and MW-4, located in the northern part of the Site (Figure 2). Relatively high concentrations were also detected in some of the confirmatory soil samples collected during over-excavation activities (Figure 3).

4.2 Extent of Separate Phase Hydrocarbons

Separate phase hydrocarbons (free product) were not present in the groundwater samples collected from monitoring wells or soil borings.

4.3 Extent of Dissolved Phase Petroleum Hydrocarbons

Based on the most recent groundwater monitoring event (Q2/04), it appears the dissolved gasoline/benzene/MtBE groundwater plume is centered in the northern portion of the property, in the vicinity of MW-2, MW-7 and OW. TPPH concentrations in these wells ranged from 1,100 to 5,800 µg/L; diesel concentrations ranged from 150 to 570 µg/L; benzene concentrations ranged from 48 to 350 µg/L; and MtBE concentrations ranged from 180 to 700 µg/L. In contrast, TPPH concentrations were lower in MW-6 (110 µg/L) and MW-8 (76 µg/L). TPHd and benzene were non-detectable in MW-6 and MW-8. MtBE was 16 µg/L in MW-6 and 26 in MW-9. The extent the dissolved plume west of these wells is undefined. A concentration map is included in the TRC report dated January 21, 2005 (Appendix B).

5.0 REMEDIAL FEASIBILITY TESTING

5.1 Dual Phase Extraction Testing

SECOR performed DPE pilot testing at the site during May 30-31, 2002. DPE was performed using a 20-hp liquid ring vacuum pump connected to a H2 Oil Recovery Systems, Inc. thermal oxidizer (Therm-ox) unit for treatment of the extracted soil vapor prior to discharge to the atmosphere. DPE was performed on well MW-10 for approximately 33.5 hours. Groundwater and soil vapor were removed simultaneously from MW-10 by applying a high vacuum to a drop pipe that was lowered into the water table within MW-10.

Physical and chemical parameters including applied vacuum, groundwater and soil vapor extraction flow rates, soil vapor temperature, and hydrocarbon vapor concentrations were monitored throughout the DPE event. Vapor concentrations were measured using a flame ionization detector (FID). Vacuum gauges were placed at nearby monitoring wells (MW-2, MW-6, MW-7 and MW-8) To monitor the negative pressure gradient induced by DPE at the respective extraction well.

During the DPE test, the applied vacuum was 25 inches of mercury and vapor extraction flow rates ranged from 21.80 cubic feet per minute (cfm) to 28.41 cfm. Groundwater elevations for observation wells MW-2, MW-6, MW-7, and MW-8 decreased by 0.28 feet, 0.40 feet, 1.40 feet and 0.18 feet, respectively. The groundwater extraction flow rate ranged from 0 to 3.0 gallons per minute (gpm). FID readings collected from the vapor extracted ranged from 2,100 parts per million by volume (ppmv) to greater than 10,000 ppmv throughout the test. Laboratory analyses of soil vapor samples collected during the DPE test are summarized in Table 5.

The total mass of TPHg, benzene, and MtBE removed during the test were estimated using the influent air analytical results, an average well field flow rate, and the time duration of the test. The calculated TPHg, benzene, and MtBE mass removed during the DPE test were approximately 24.15 pounds, 0 pounds, and 0.07 pounds, respectively. Table 6 provides mass removal data collected during the test.

5.2 Aquifer Pumping Test

In May 2002, SECOR performed an aquifer pumping test of the first-encountered saturated zone at the site. The test used MW-10 as the pumping well and MW-2, MW-7, MW-8, MW-9, and OW as observation wells. Aquifer testing results are provided in Table 7. A step-drawdown test was performed to assess the sustainable yield of the pumping well (MW-10) for the constant-rate aquifer pumping test.

The objective of the constant-rate pumping test was to impose hydraulic stress on the aquifer by pumping from the selected well while monitoring the drawdowns in the observation wells. The resulting drawdown data were used to evaluate the response of the aquifer to pumping, and estimate aquifer parameters, such as transmissivity (T) and specific yield (Sy). For this site, the constant-rate aquifer pumping test consisted of a pumping phase and recovery phase. Well MW-10 was pumped at a sustainable rate of approximately 0.5 gpm for a total of 24 hours. The pumping rate of 0.5 gpm provided

approximately 13.5 feet of an available 19.0 feet of drawdown. During the constant-rate pumping test, water levels were electronically monitored in the selected observation wells.

Values obtained from observation wells MW-7 and MW-9 data analyses were used to arrive at the average estimate of T and hydraulic conductivity (K). Data from MW-2, MW-8 and OW were not used in estimating the average T as data from these observation wells showed minimal displacement and what appeared to be random fluctuations during the performance of the constant rate test. Average values of 74.4 ft^2/day and 0.024 were estimated for T and Sy, respectively. Based on a saturated thickness of 19 feet, the average K was estimated to be 3.9 ft/day. In addition, the zone of influence of the pumping well was calculated to be 161.7 feet.

5.3 Feasibility Study

A Feasibility Study was conducted by SECOR in December 1999. Five remedial alternatives were evaluated in the study. The remedial alternatives were Groundwater Extraction and Treatment (GET), Soil Vapor Extraction/Air Sparge (SVE/AS), Dual Phase Extraction (DPE), Natural Attenuation (NA), and Chemical Oxidation (CO).

GET was eliminated by the Feasibility Study based on the length of time that would be required to remediate a site, the lack of source removal, and the possibility of continued leaching of contamination to groundwater subsequent to system shut down. SVE/AS was eliminated by the Feasibility Study because it would not directly remove the large mass of hydrocarbons dissolved in groundwater and would not provide plume migration control. DPE was eliminated by the Feasibility Study because of associated costs. The NA alternative was eliminated by the Feasibility Study due to the potential threat to human health and the environment. CO was considered by the Feasibility Study as the most feasible alternative for the site. The feasibility study recommended use of a chemical oxidation treatment called Fenton's reagent (hydrogen peroxide, sulfuric acid, and ferrous iron).

6.0 EVALUATION OF REMEDIAL ALTERNATIVES

Site conditions, data collected during previous remedial activities, data collected during feasibility testing, aquifer pump testing, DPE testing and SECOR's experience in remediation of hydrocarbons at other sites across California were the basis for evaluating the potential viability of remedial alternatives.

Based on lithologic, hydrogeologic, and contaminant plume conditions present at the site (and SECOR's experience with similar sites), several potential remedial alternatives for cleanup of petroleum hydrocarbons in soil and groundwater have been identified. The goal of the selected remedial alternative(s) would be removal and/or mitigation of petroleum hydrocarbons in soil and groundwater to meet cleanup goals. Table 8 provides a feasibility matrix including cost estimates.

6.1 PROPOSED REMEDIATION GOALS

Final cleanup levels for petroleum hydrocarbons at the site are the maximum contaminant levels (MCL). A request for no further action may be submitted before final cleanup levels are achieved if it is shown that: (1) residual concentrations are at or below levels set by a future Risk Based Corrective Action (RBCA) Assessment evaluation, (2) the groundwater plume is found to be stable or receding, and (3) the chemical constituents of concern will naturally attenuate to the final cleanup levels.

Concentrations of petroleum hydrocarbons in the water-bearing zone are currently above the proposed target cleanup levels and will be addressed by the proposed remedial alternative. The following table presents the proposed clean-up levels and are based on MCLs established by California Department of Health Services.

Constituents of Concern	Final Clean-up Level (ppb)	Source
TPHg	50	Default water quality limit based on laboratory method detection limit
Benzene	1.0	California Department of Health Services Primary MCL
Toluene	150	California Department of Health Services Primary MCL
Ethylbenzene	700	California Department of Health Services Primary MCL
MtBE	5	California Department of Health Services Secondary MCL

6.2 Identification and Discussion of Remedial Alternatives

The following technologies to remediate petroleum hydrocarbons adsorbed to soil and dissolved in groundwater at the site were evaluated:

- Soil Vapor Extraction/Air Sparge;
- Dual Phase Extraction;
- Natural Attenuation; and

- Chemical Oxidation.

Table 8 summarizes SECOR's evaluation of the technical an economic feasibility of four remedial alternatives. Based upon site conditions and economic considerations, SECOR eliminated 3 of the 4 considered alternatives.

6.2.1 Soil Vapor Extraction/Air Sparge

SVE/AS involves injecting air into the saturated zone and extracting vapors from the vadose zone, combined with treatment of the extracted air using GAC, an internal combustion (IC) engine, a catalytic/thermal oxidizing (CatOx) unit, an air stripper, or other method, followed by discharge of the treated vapor stream to ambient air, under permit from the overseeing air quality board.

SECOR eliminated this remedial alternative for this site because the method does not provide dissolved phase plume control or prevent offsite migration of contaminants.

6.2.2 Dual Phase Extraction

This alternative consists of extracting vapor and liquids from a common well, rather than from wells specifically designed to allow extraction of vapor and/or groundwater only. Instead, vapor and liquid are removed from each well using a high vacuum pump (such as a liquid ring pump), with the liquids decanted into a separate holding tank via a knock out pot, and the resulting separate phases (liquid and vapor) treated using GAC, IC engine, CatOx unit, an air stripper, or other method, followed by discharge of the treated effluent to ambient air, and/or to the sanitary or storm sewer. Section 5.3 describes the DPE pilot test conducted by SECOR and its results.

SECOR selected this remedial alternative for this site. The rationale for selection of this alternative is presented in Table 8 and discussed in section 6.3.1.

6.2.3 Natural Attenuation

This alternative assumes that the existing subsurface conditions are sufficient to naturally degrade the constituents of concern without active remediation.

SECOR eliminated this remedial alternative for this site because the method requires an extensive length of time for the groundwater monitoring and sampling to show proven clean-up results. This method was also eliminated because of the lengthy remedial timeframe and because the method does not provide dissolved phase plume control or prevent offsite migration of contaminants. However, this method may be re-evaluated for addressing petroleum hydrocarbons remaining at the site after active remediation is no longer technically or economically effective (e.g. concentration trends become asymptotic).

6.2.4 Chemical Oxidation

This alternative includes introduction of an oxidizing compound or mixture into the subsurface via injection points or wells. The introduced compound is selected to facilitate

degradation of the constituent(s) of concern without requiring extraction or removal of vapor or water from the subsurface. SECOR eliminated this remedial alternative for this site because the method does not provide dissolved phase plume control or prevent offsite migration of contaminants.

6.3 Proposed Remedial Alternative

SECOR selected DPE as the preferred remedial alternative for this site.

6.3.1 Dual Phase Extraction

SECOR proposes to implement DPE to cleanup petroleum hydrocarbons beneath the site. DPE will directly remove petroleum hydrocarbons from the vadose and in the saturated zone beneath the site. The results of the DPE pilot test indicate that this remedial method would effectively remediate the site in a cost-effective manner. Contaminated groundwater will be extracted from the subsurface and treated to remove petroleum hydrocarbons. Extraction of groundwater will lower the water table, create a cone of depression that will limit further off-site migration of dissolved contamination, and expose the contaminated capillary fringe (smear zone) soils for vapor phase extraction.

6.3.1.1 Conceptual Remedial Alternative Design and Process Flow

Wells MW-2, MW-7 and MW-10 and four new extraction wells (EW-1, EW-2, EW-3, and EW-4) are proposed for use as DPE wells. The locations of the proposed extraction wells are shown on Figure 7. These wells are proposed based on an estimated 26-foot SVE radius of influence calculated from DPE pilot testing.

Based on historical soil analytical data, a thermal or catalytic oxidizer will be required to abate extracted vapors. The expected destruction efficiency for the abatement equipment will be at least 95 percent. The thermal oxidizer will be capable of extracting and treating up to 500 cfm of soil vapor from the extraction wells. Influent and effluent petroleum hydrocarbon vapor samples, process temperatures, applied vacuums, and flow rates will be measured as required for permit compliance and to ensure reliable operation of the system. Permit to operate and discharge to the atmosphere will be obtained through the Bay Area Air Quality Management District (BAAQMD).

Based on the low groundwater extraction rates observed during DPE feasibility testing, the proposed DPE system is expected to generate 1-3 gpm from the well array. The proposed groundwater treatment system will be capable of treating 5 gallons per minute through three 2,000-pound GAC vessels in series prior to discharge to the sanitary sewer under a POTW or NPDES permit. Remediation system piping will be winterized to withstand seasonal fluctuations in temperature. Influent and effluent groundwater samples will be analyzed and GWE rates will be measured as required for permit compliance and to ensure reliable operation of the system.

6.3.2 Batch Extraction

Batch extraction will be continued as an interim remedial measure until the CAP is approved by the Sonoma County Environmental Health Division (SCEHD). Once the CAP is approved, batch extraction will discontinue and the DPE system will be designed and installed.

7.0 CORRECTIVE ACTION IMPLEMENTATION

7.1 Remediation System Permitting and Installation

The proposed treatment system will reduce influent vapor concentrations to effluent levels acceptable to the BAAQMD. An application for an authority to construct (ATC) permit for the thermal oxidizer treatment system will be prepared and submitted to the BAAQMD. After an ATC permit is obtained and the system is installed, a source test will be conducted to verify system performance. A permit to operate (PTO) will be obtained at the successful completion of the source test and compliance demonstration.

The proposed system will also reduce influent groundwater concentrations to effluent levels acceptable by the City of Cotati or Regional Water Quality Control Board (as applicable). Either a Publicly Owned Treatment Works (POTW) permit or National Pollutant Discharge Elimination System (NPDES) permit will be obtained for discharge of treated groundwater. A source test will be conducted as required by the permit after the system is installed to verify system performance and permit compliance.

Construction of the treatment equipment compound will meet applicable local building codes and fire department regulations. An approximately 15 feet by 20 feet by 6-foot high, chain-linked fence with slats, will be placed around the remediation equipment and piping manifolds.

7.2 Remediation System Troubleshooting and Startup

Upon completion of DPE system installation, the DPE system will be operated to verify the correct operation of all process equipment and controls, and to troubleshoot and repair any component of the system not operating correctly. Once the system is fully operable, official startup will be performed. Data from the startup will be tabulated as necessary to evaluate the remediation system performance.

7.3 Remediation System Operation and Reporting

Performance of the remediation system will be reported on a quarterly basis. The remediation system will be operated until remediation goals are achieved or until such time as the remediation effort is shown to no longer be technically or economically feasible. Throughout the life of the system, operations will be monitored, at a minimum, to verify permit compliance and to meet permit reporting requirements. Groundwater monitoring and sampling will continue to be performed at the site as required.

System efficiency reporting will include summaries of mass extracted, mass extraction rates, and any modifications to system operation. Groundwater concentrations will be compared to cleanup goals to evaluate remedial progress. Influent vapor concentrations will be used to evaluate the effectiveness of SVE for remediation of petroleum hydrocarbons in soil.

7.4 Remediation Schedule

SECOR proposes to initiate preliminary field activities, including the preparation of a Work Plan detailing the specific scope of this remedial option, immediately following approval of this CAP by the SCEHD. The anticipated schedule to complete the tasks contained in this letter is as follows:

- Task 1 – Continue Batch extraction until CAP approval.
- Task 2 – Permit new DPE wells and DPE system.
- Task 3 – Install new DPE wells.
- Task 4 – Install DPE system.
- Task 5 – Startup DPE system.
- Task 6 – Data Compilation and Reporting- One month after final sampling analytical results have been received.

Upon approval of this CAP from SCEHD it is anticipated that implementation of this CAP will require approximately 3 to 6 months, assuming no major scheduling conflicts. Timing for implementation is dependent on the submittal and approval of remediation system design plans, receipt of necessary permits, and establishing on-site power sources.

8.0 REFERENCES

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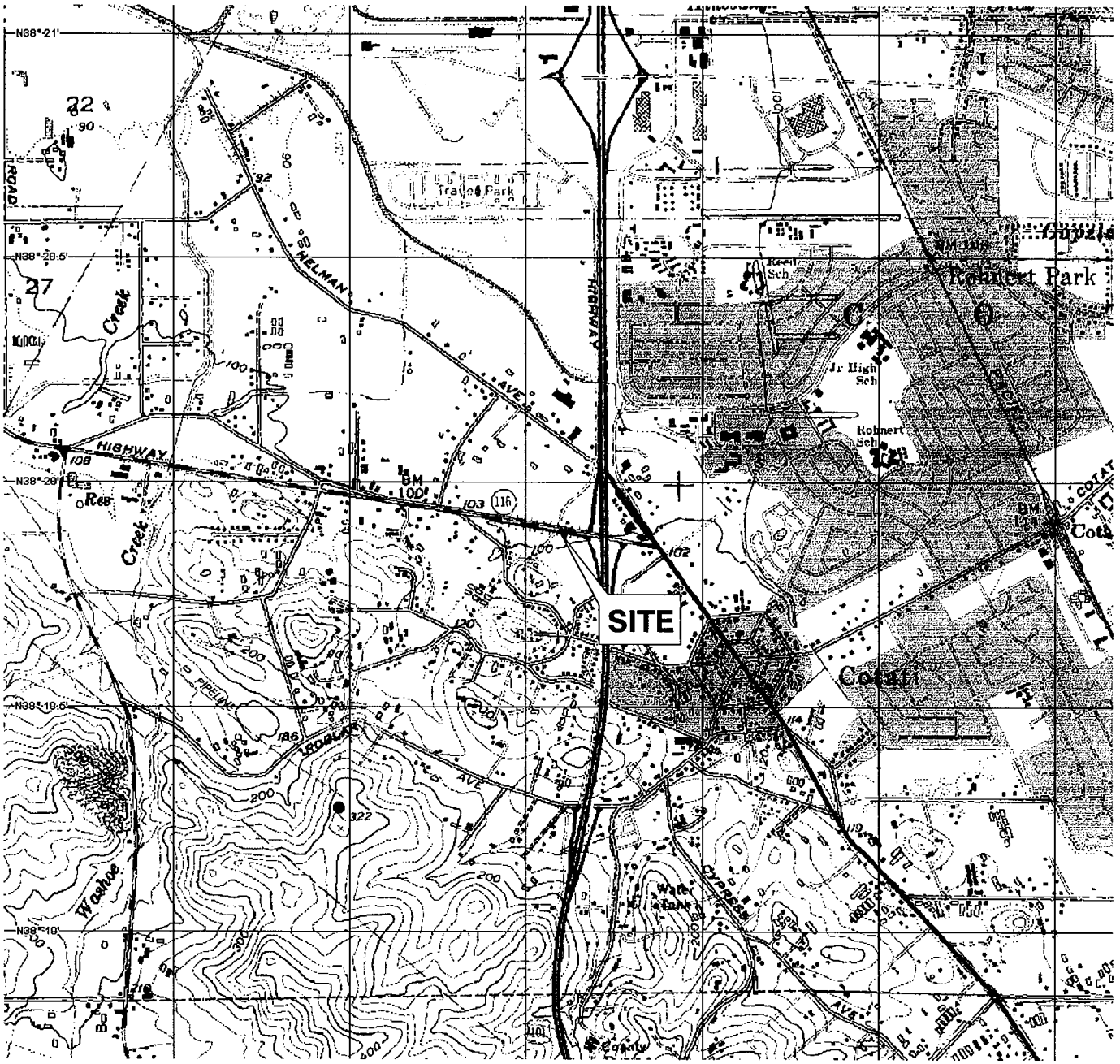
SECOR, *Dual-Phase Extraction Summary Report*, Tosco (Former Circle K) Station No. 05426, 8510 Gravenstein Highway, Cotati, California, August 2, 2002.

SECOR, *Groundwater Extraction*, ConocoPhillips (Former Tosco/Circle K) Service Station No. 05426, 8510 Gravenstein Highway, Cotati, California, August 14, 2003.

FIGURES



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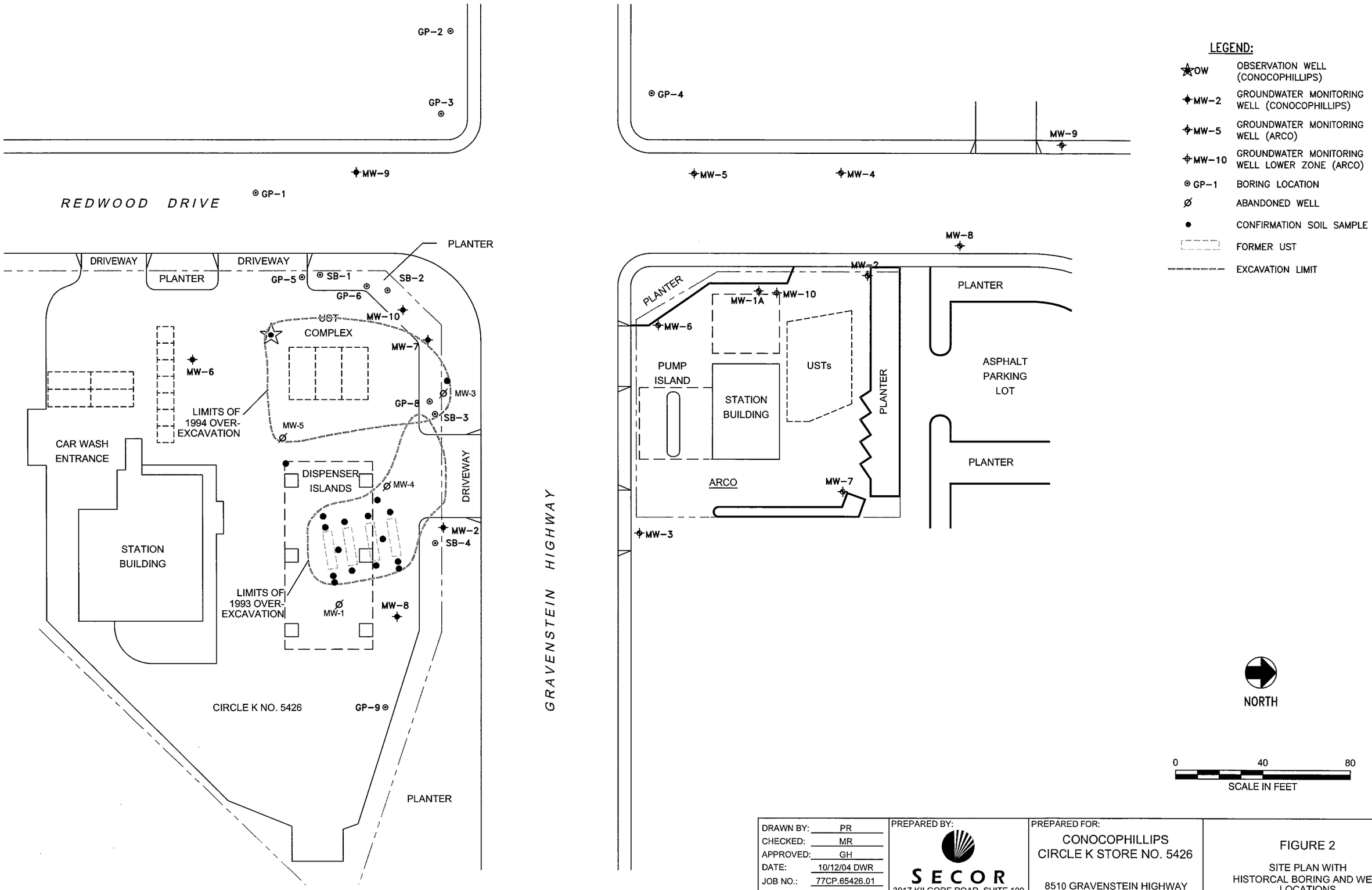
REFERENCE: DELORME TOPOQUAD, CALIFORNIA
NORTH REGION 5

0 2000 4000

SCALE IN FEET

DRAWN BY: PR CHECKED: MR APPROVED GH DATE: 9/9/04 JOB NO.: 77CP.65426.01 CAD FILE: SITE LOC	PREPARED BY: SECOR 3017 KILGORE ROAD, SUITE 100 RANCHO CORDOVA, CA 95670	PREPARED FOR: CONOCOPHILLIPS CIRCLE K STORE NO. 5426 8501 GRAVENSTEIN HIGHWAY COTATI, CALIFORNIA	FIGURE 1 SITE LOCATION MAP	



DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	10/12/04 DWR
JOB NO.:	77CP.65426.01
CAD FILE:	SITEPLAN

PREPARED BY:

SECOR

3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:

CONOCOPHILLIPS
CIRCLE K STORE NO. 5426

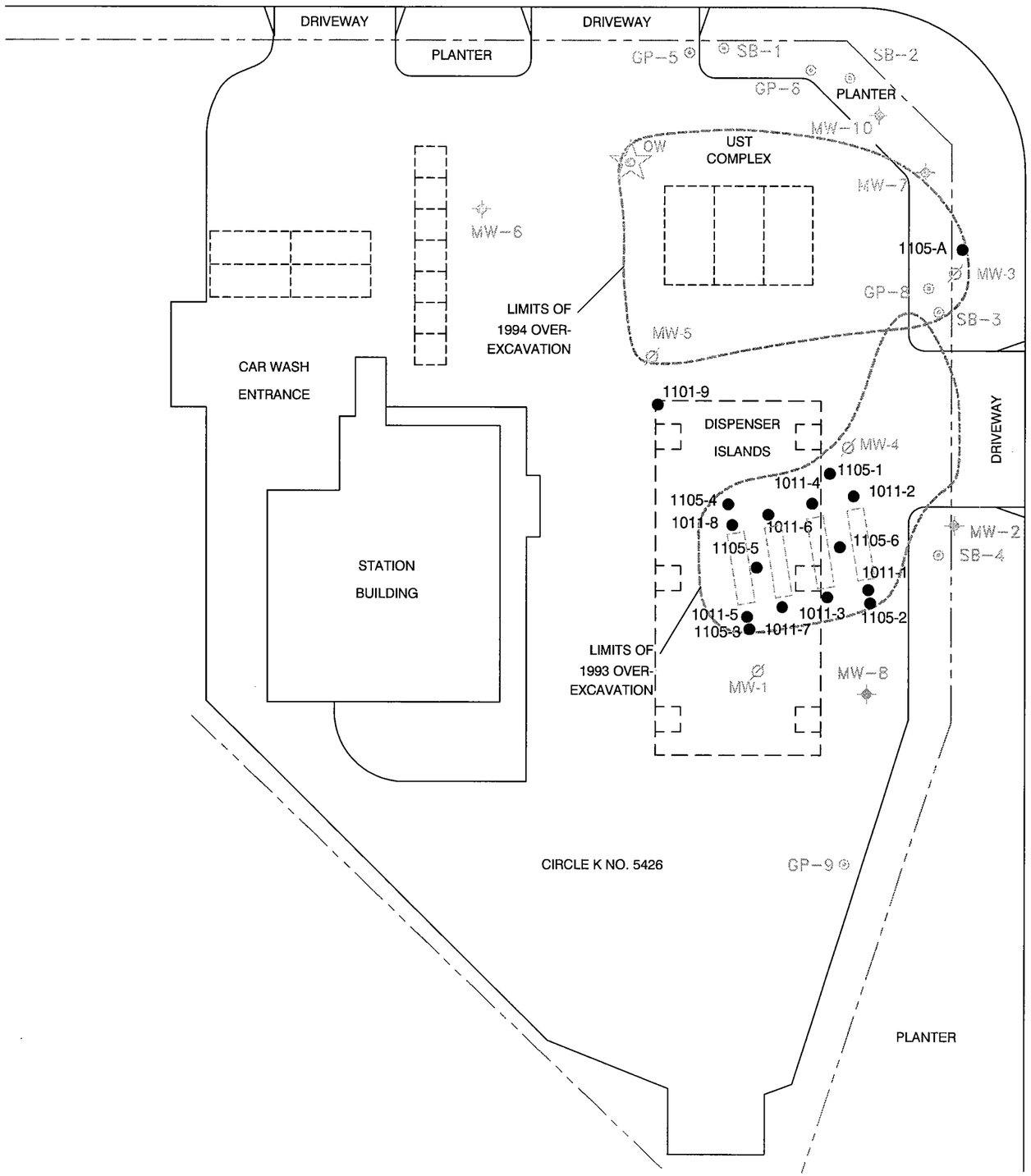
8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 2

SITE PLAN WITH
HISTORCAL BORING AND WELL
LOCATIONS

Q:\CADD-77\ConocoPhillips\5426\5426-Figure 2 Site Plan.dwg, 3/9/2005 7:59:27 AM, dcyr, SACRAMENTO_077

REDWOOD DRIVE



GRAVENSTEIN HIGHWAY

LEGEND:

OW	OBSERVATION WELL (CONOCOPHILLIPS)
MW-2	GROUNDWATER MONITORING WELL (CONOCOPHILLIPS)
GP-1	BORING LOCATION
	DESTROYED WELL
	CONFIRMATION SOIL SAMPLE
	FORMER UST
	EXCAVATION LIMIT

NORTH

0 30 60

APPROXIMATE SCALE FEET

DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	10/13/04 DWR
JOB NO.:	77CP.65426.01
CAD FILE:	SOIL SAMPLES

PREPARED BY:

SECOR

3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:

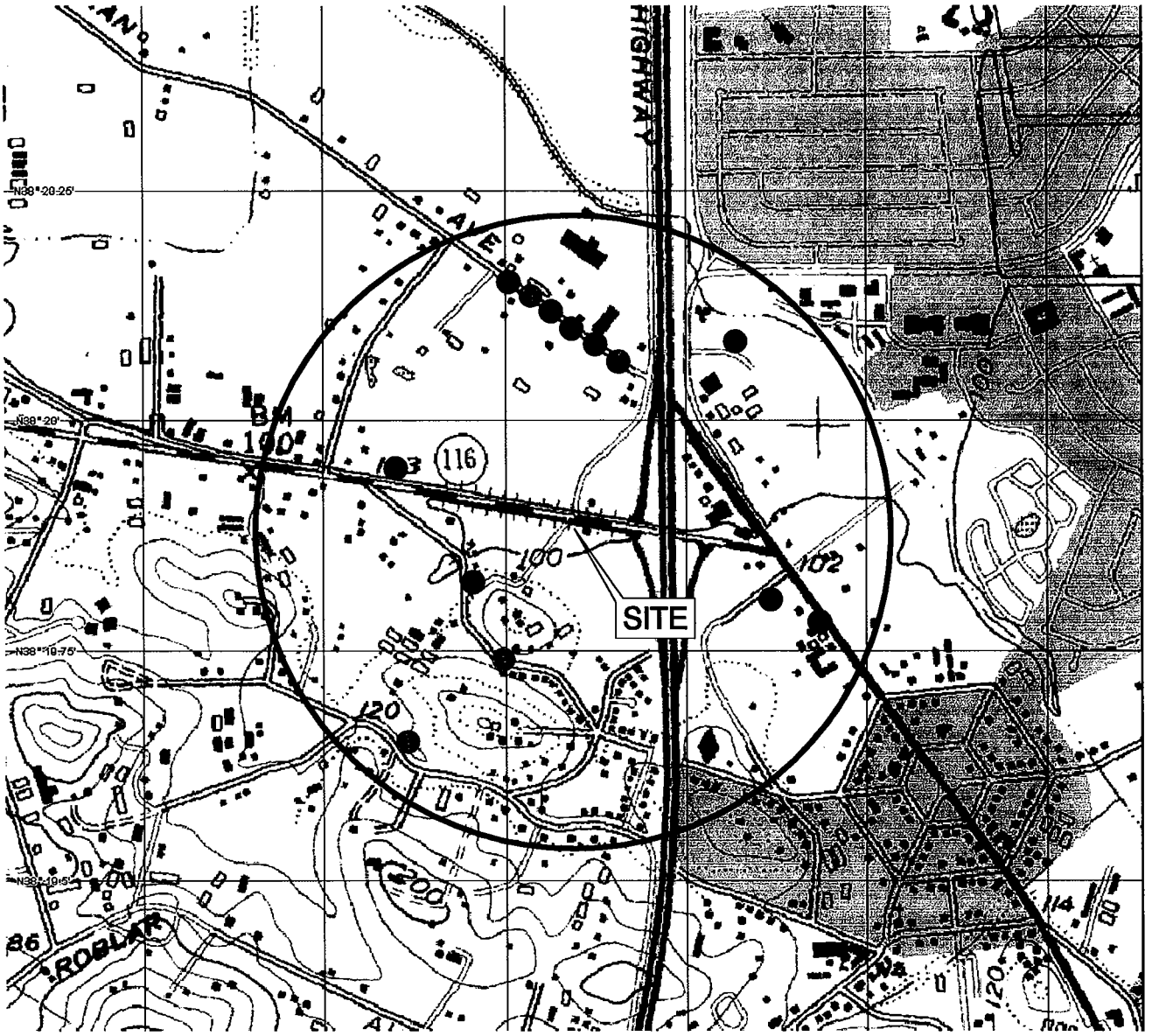
CONOCOPHILLIPS
CIRCLE K STORE NO. 5426

8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 3

SITE PLAN WITH HISTORICAL EXCAVATIONS & CONFIRMATORY SOIL SAMPLE LOCATIONS

Q:\CADD-77\ConocoPhillips\5426\5426-Figure 3 Soil Sample.dwg, 3/9/2005 8:01:21 AM, droy, SACRAMENTO_077



REFERENCE: DELORME TOPOQUAD, CALIFORNIA
NORTH REGION 5

N

LEGEND:

- WELL LOCATION
- WELL LOCATION (APPROXIMATE, EXACT ADDRESS UNKNOWN)

0 1000 2000

SCALE IN FEET

DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	9/9/04
JOB NO.:	77CP.65426.01
CAD FILE:	WELL SURVEY

PREPARED BY:

SECOR
3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:

CONOCOPHILLIPS
CIRCLE K STORE NO. 5426

8501 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 4

WELL SURVEY MAP

Q:\CADD-77\ConocoPhillips\5426\CP 5426 WELLSURVEY.dwg, 3/9/2005 8:51:19 AM, droy, SACRAMENTO 077

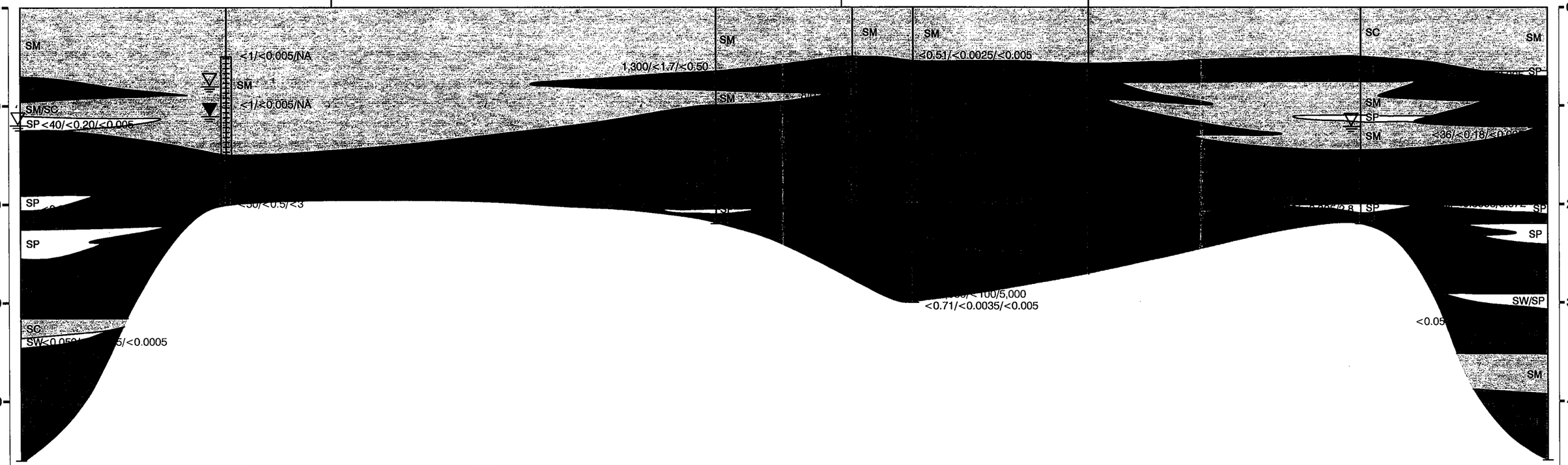
A — **SOUTHEAST**

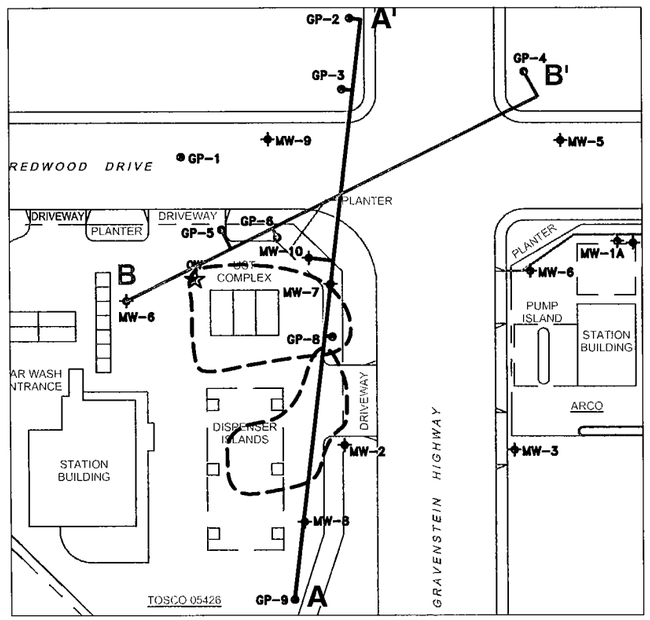
A' — **NORTHWEST**

APPROXIMATE EXCAVATION LIMITS

INTERSECTION WITH B-B'

GP-9 | MW-8 | PROJ 4' GP-8 | MW-7 | PROJ 13' MW-10 | PROJ 6' GP-3 | PROJ 6' GP-2





CROSS-SECTION LOCATION MAP
1" = 80'

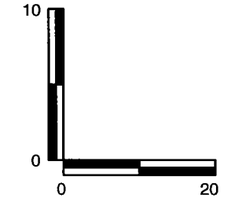
LEGEND:

- INTERPRETED SOIL STRATIGRAPHIC BOUNDARY
- <1/<0.005/<0.50 — SOIL SAMPLE TPHg/BENZENE/MtBE IN mg/kg
- <50/<0.50/<2 — WATER SAMPLE TPHg/BENZENE/MtBE IN ppb
- SCREENED INTERVAL FOR MONITORING WELLS
- DEPTH TO FIRST WATER (DURING DRILLING)
- DEPTH TO STATIC WATER (Q2/04)

INCREASING PERMEABILITY

- ML/CL
- SM/SC
- SW/SP/GP

TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MtBE	METHYL TERT-BUTYL ETHER
NA	NOT ANALYZED
ML	SILT
CL	CLAY
SM	SILTY SAND/SAND WITH SILT
SC	CLAYEY SAND/SAND WITH CLAY
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
GP	POORLY GRADED GRAVEL



SCALE IN FEET
VERTICAL EXAGGERATION 2X

DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	10/12/04 DWR
JOB NO.:	77CP.65426.01
CAD FILE:	XSAA

PREPARED BY:
SECOR
3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:
CONOCOPHILLIPS
CIRCLE K STORE NO. 5426
8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 5

GENERALIZED GEOLOGIC CROSS-SECTION A-A'

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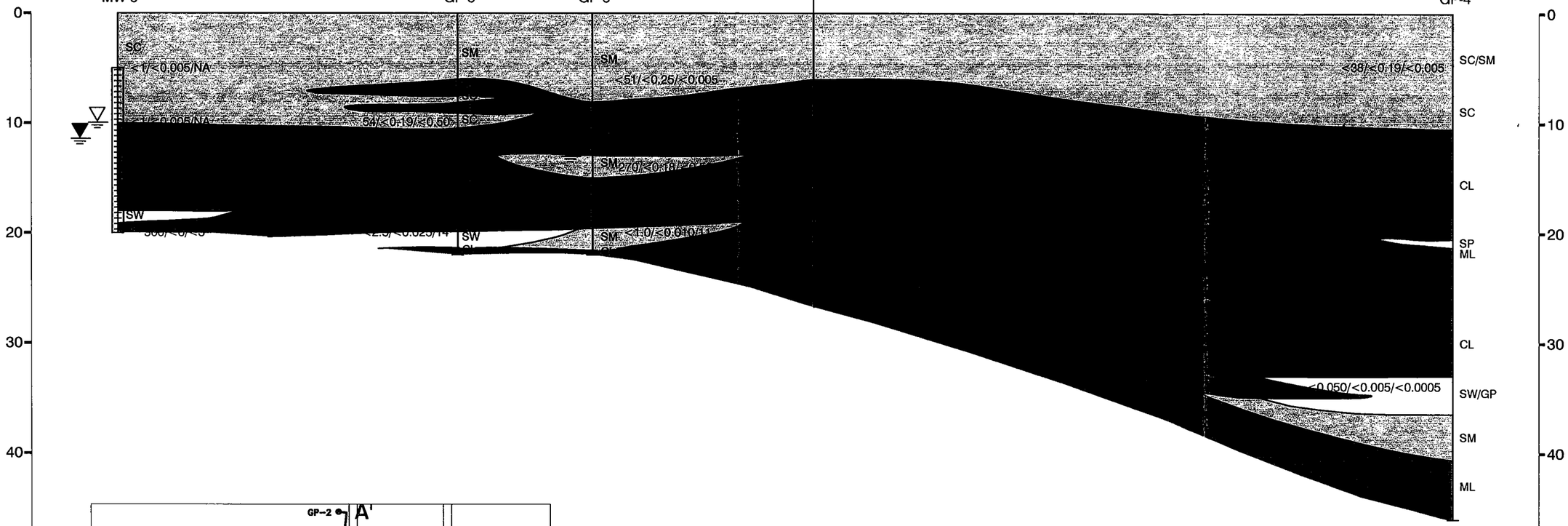
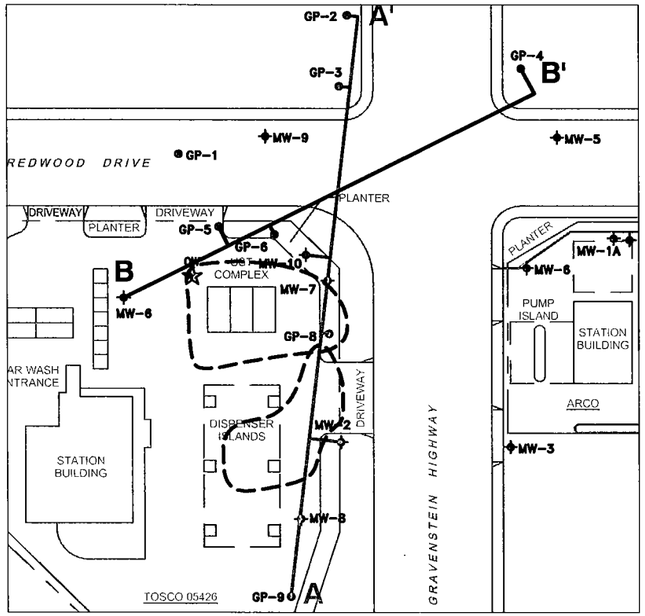
B SOUTH

B' NORTH

INTERSECTION WITH A-A'

MW-6 | PROJ 11' GP-5 | PROJ 5' GP-6 | PROJ 15' GP-4





CROSS-SECTION LOCATION MAP
1" = 80'

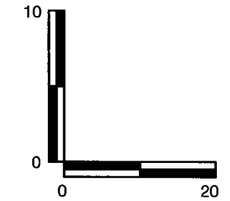
LEGEND:

- INTERPRETED SOIL STRATIGRAPHIC BOUNDARY
- <1/<0.005/<0.50 — SOIL SAMPLE TPHg/BENZENE/MtBE IN mg/kg
- <50/<0.50/<2 — WATER SAMPLE TPHg/BENZENE/MtBE IN ppb
- SCREENED INTERVAL FOR MONITORING WELLS
- DEPTH TO FIRST WATER (DURING DRILLING)
- DEPTH TO STATIC WATER (Q2/04)

ML/CL
SM/SC
SW/SP/GP

INCREASING PERMEABILITY

TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MtBE	METHYL TERT-BUTYL ETHER
NA	NOT ANALYZED
ML	SILT
CL	CLAY
SM	SILTY SAND/SAND WITH SILT
SC	CLAYEY SAND/SAND WITH CLAY
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
GP	POORLY GRADED GRAVEL



SCALE IN FEET
VERTICAL EXAGGERATION 2X

DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	10/12/04 DWR
JOB NO.:	77CH.11621.13
CAD FILE:	SITE PLAN

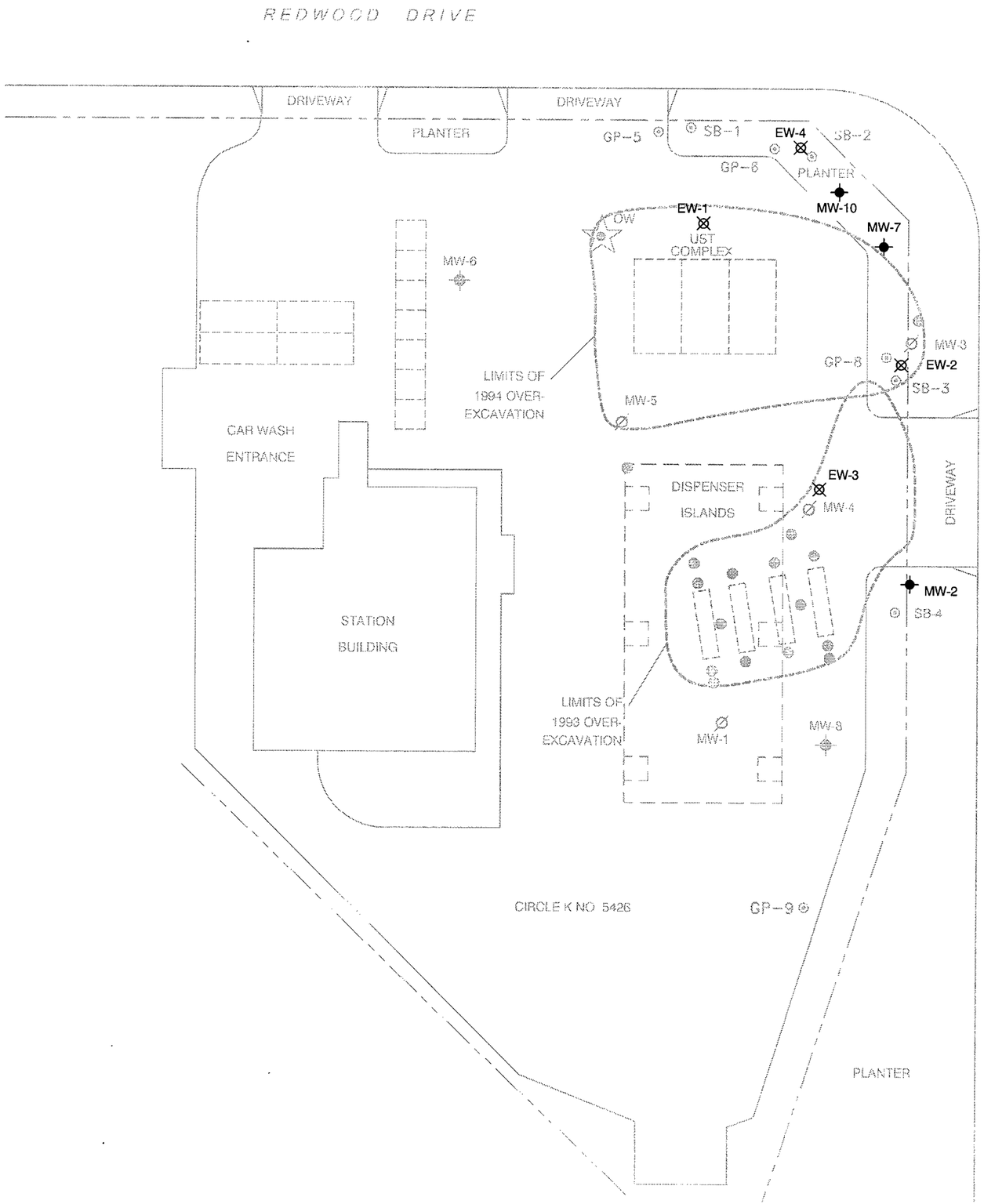
PREPARED BY:
SECOR
3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:
CONOCOPHILLIPS
SERVICE STATION #05426
8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 6

GENERALIZED GEOLOGICAL CROSS-SECTION B-B'

Q:\CADD-77\ConocoPhillips\5426\CP 5426-XSBB.dwg, 3/9/2005 8:11:07 AM, dtroy, SACRAMENTO_077



LEGEND:

- OW — OBSERVATION WELL (CONOCOPHILLIPS)
- MW-2 — GROUNDWATER MONITORING WELL (CONOCOPHILLIPS)
- GP-1 — BORING LOCATION
- DESTROYED WELL
- CONFIRMATION SOIL SAMPLE
- EW-1 — PROPOSED REMEDIATION WELL (DUAL-PHASE EXTRACTION)
- FORMER UST
- EXCAVATION LIMIT

NORTH

0 30 60

APPROXIMATE SCALE FEET

DRAWN BY:	PR
CHECKED:	MR
APPROVED:	GH
DATE:	10/13/04 DWR
JOB NO.:	77CP.65426.01
CAD FILE:	REMEDIATION

PREPARED BY:

SECOR

3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CA 95670

PREPARED FOR:

CONOCOPHILLIPS
CIRCLE K STORE NO. 5426

8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

FIGURE 7

SITE PLAN WITH
PROPOSED REMEDIATION WELLS

Q:\CADD-77\ConocoPhillips\5426\5426-Figure 7 Remediation.dwg, 3/9/2005 8:12:15 AM, dray, SACRAMENTO_077

TABLES

Table 1
Soil Boring and Well Construction Details

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

Well I.D.	Drill Date	Boring Depth (feet bgs)	Well		Screen		Screen Length (feet)	Interval of Cement Grout (feet bgs)	Interval of Bentonite Seal (feet bgs)	Interval of Sand Pack (feet bgs)
			Depth (feet bgs)	Diameter (inches)	Top (feet bgs)	Bottom (feet bgs)				
Groundwater Monitoring Wells										
MW-1	1991	25	U	U	U	U	U	U	U	U
MW-2	1991	25	U	U	U	U	U	U	U	U
MW-3	1991	25	U	U	U	U	U	U	U	U
MW-4	1991	25	U	U	U	U	U	U	U	U
MW-5	1991	25	U	U	U	U	U	U	U	U
MW-6	01/24/96	20	20	2	5	20	15	0-2	2-3	3-20
MW-7	01/24/96	20	20	2	5	20	15	0-2	2-3	3-20
MW-8	01/24/96	20	20	2	5	20	15	0-1	1-2	2-20
MW-9	04/30/97	19	18	2	4	18	14	0-2	2-3	3-18
MW-10	05/17/02	30	30	4	10	20	10	0-6	6-8	8-30
OW	See Note									
Soil Borings										
GP-1	07/11/01	22	—	—	—	—	—	0-22	—	—
GP-2	07/11/01	46	—	—	—	—	—	0-46	—	—
GP-3	07/11/01	22	—	—	—	—	—	0-22	—	—
GP-4	07/13/01	46	—	—	—	—	—	0-46	—	—
GP-5	07/12/01	22	—	—	—	—	—	0-22	—	—
GP-6	07/12/01	22	—	—	—	—	—	0-22	—	—
GP-8	07/12/01	22	—	—	—	—	—	0-22	—	—
GP-9	07/12/01	46	—	—	—	—	—	0-46	—	—
SB-1	01/25/96	16	—	—	—	—	—	0-16	—	—
SB-2	01/25/96	15	—	—	—	—	—	0-15	—	—
SB-3	01/25/96	15	—	—	—	—	—	0-15	—	—
SB-4	01/25/96	15	—	—	—	—	—	0-15	—	—

Note:
Tank pit well, installation date and construction details unavailable.

Abbreviations:
U = information unavailable
NA=not applicable

Explanation:
All wells are of PVC construction
bgs = Below Ground Surface

Table 2
Soil Analytical Results

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

Sample ID	Sample Depth (ft bgs)	Date Collected	TPHg (mg/Kg)	TPHd (mg/Kg)	TRPH mg/Kg	HOCs* mg/Kg	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	MtBE (mg/Kg)	TAME (mg/Kg)	EtBE (mg/Kg)	DIPE (mg/Kg)	Ethanol (mg/Kg)	1,2-DBA (mg/Kg)	1,2-DCA (mg/Kg)	TBA (mg/Kg)	Lead (mg/Kg)	Cadmium mg/Kg	Chromium mg/Kg	Nickelm g/Kg	Lead mg/Kg	Zinc mg/Kg	Oil & Grease
MW-1	13	10/2/1991	<1.0	<1.0	---	---	<0.005	0.008	0.006	0.028	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	13	10/2/1991	230	110	---	---	2.6	4.9	5.7	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	13	10/2/1991	240	5	---	---	0.6	1.5	5.8	13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	3	10/3/1991	<1.0	<1.0	---	---	0.017	0.007	0.008	0.035	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	13	10/3/1991	460	42	---	---	7.1	6	10	32	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	13	10/3/1991	350	30	---	---	0.65	0.2	9.3	14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	5	1/24/1996	<1	<10	<25	nd	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	<1	9	<10	2	8	---
MW-6	10	1/24/1996	<1	<10	<25	nd	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	<1	38	40	6	24	---
MW-7	3	1/24/1996	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	6	1/24/1996	2	<10	<25	nd	0.062	<0.005	0.036	<0.005	---	---	---	---	---	---	---	---	---	<1	21	14	4	12	---
MW-7	9	1/24/1996	8	<10	<25	nd	0.1	<0.1	0.2	0.2	---	---	---	---	---	---	---	---	---	<1	23	46	7	18	---
MW-8	5	1/24/1996	<1	<10	<25	nd	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	<1	11	<10	5	8	---
MW-8	10	1/24/1996	<1	<10	<25	nd	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	<1	33	45	7	33	---
MW-9	4	4/30/1997	nd	6	---	---	nd	nd	nd	nd	nd	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-10	5	5/17/2002	<0.51	---	---	---	<0.0025	<0.0025	<0.0025	<0.0025	<0.005	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
MW-10	10	5/17/2002	2.4	---	---	---	<0.004	<0.004	<0.004	0.0062	0.13	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
MW-10	15	5/17/2002	3.1	---	---	---	0.0036	0.012	0.0081	0.0091	0.045	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
MW-10	20	5/17/2002	<0.76	---	---	---	<0.0038	<0.0038	<0.0038	<0.0038	730000	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
MW-10	25	5/17/2002	<0.77	---	---	---	<0.0039	<0.0039	<0.0039	<0.0039	0.044	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
MW-10	30	5/17/2002	<0.71	---	---	---	<0.0035	<0.0035	<0.0035	<0.0035	<0.005	<0.005	<0.005	<0.005	<0.2	---	<0.005	<0.1	---	---	---	---	---	---	---
1011-1	12	10/11/1993	380	---	---	---	2.4	4.1	6.1	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-2	12	10/11/1993	590	---	---	---	2	12	17	730	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-3	12	10/11/1993	27	---	---	---	0.024	0.026	0.25	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-4	15	10/11/1993	270	---	---	---	1	0.66	5.5	26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-5	14	10/11/1993	2,600	---	---	---	28	100	67	340	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-6	12	10/11/1993	590	---	---	---	1.3	16	16	82	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-7	14	10/11/1993	na	16	---	---	0.055	0.076	0.280	1.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-8	12	10/11/1993	na	110	---	---	<0.02	0.043	0.150	0.68	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1011-9	10	10/11/1993	<1	<5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	nd	---	---	---	---	---	nd
1011-10	12	10/11/1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13	---	---	---	---	---	---
1105-1	10	11/05/93	4	---	---	---	<0.005	<0.005	0.0051	1.16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1105-2	10	11/05/93	<1	---	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1105-3	11	11/05/93	---	<5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1105-4	10	11/05/93	---	<5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1105-A	9	10/5/1994	<1	65	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 2
Soil Analytical Results

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

Sample ID	Sample Depth (ft bgs)	Date Collected	TPHg (mg/Kg)	TPHd (mg/Kg)	TRPH mg/Kg	HOCs* mg/Kg	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	MtBE (mg/Kg)	TAME (mg/Kg)	EtBE (mg/Kg)	DIPE (mg/Kg)	Ethanol (mg/Kg)	1,2-DBA (mg/Kg)	1,2-DCA (mg/Kg)	TBA (mg/Kg)	Lead (mg/Kg)	Cadmium mg/Kg	Chromium mg/Kg	Nickelm g/Kg	Lead mg/Kg	Zinc mg/Kg	Oil & Grease
SB-1	5	1/25/1996	<1	<25	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-1	8	1/25/1996	13	<25	---	---	<0.05	<0.1	<0.1	<0.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-1	15	1/25/1996	130	38	---	---	<0.2	<0.4	1.8	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-2	5	1/25/1996	<1	<25	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-2	10	1/25/1996	58	<25	---	---	<0.05	<0.1	0.4	0.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-2	15	1/25/1996	12	<25	---	---	<0.05	<0.1	<0.1	<0.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-3	5	1/25/1996	420	<25	---	---	1.2	11	7.3	33	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-3	10	1/25/1996	350	117	---	---	0.8	3.4	7.3	34	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-3	15	1/25/1996	780	206	---	---	2	11	16	72	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-4	3	1/25/1996	<1	<25	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-4	6	1/25/1996	<1	<25	---	---	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SB-4	15	1/25/1996	5	<25	---	---	0.026	<0.005	0.043	0.14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GP-1	7	7/11/2001	<36	---	---	---	<0.18	<0.18	<0.18	<0.18	<0.005	<0.005	<0.005	<0.005	<0.2	---	---	<0.1	---	---	---	---	---	---	---
GP-1	16	7/11/2001	78	---	---	---	<0.2	<0.2	<0.2	0.22	0.014	<0.005	<0.005	<0.005	<0.2	---	---	<0.1	---	---	---	---	---	---	---
GP-2	7	7/11/2004	<40	---	---	---	<0.2	<0.2	<0.2	<0.2	<0.005	<0.005	<0.005	<0.005	<0.2	---	---	<0.1	---	---	---	---	---	---	---
GP-2	13	7/11/2001	<36	---	---	---	<0.18	<0.18	<0.18	<0.18	<0.005	<0.005	<0.005	<0.005	<0.2	---	---	<0.1	---	---	---	---	---	---	---
GP-3	20	7/11/2001	<39	---	---	---	<0.20	<0.20	<0.20	<0.20	<5.0	<5.0	<5.0	<5.0	<200	---	---	<100	---	---	---	---	---	---	---
GP-4	5	7/13/2001	<38	---	---	---	<0.19	<0.19	<0.19	<0.19	<0.005	<0.005	<0.005	<0.005	<0.20	---	---	<0.10	---	---	---	---	---	---	---
GP-4	16	7/13/2001	<34	---	---	---	<0.17	<0.17	<0.17	<0.17	<0.005	<0.005	<0.005	<0.005	<0.20	---	---	<0.10	---	---	---	---	---	---	---
GP-5	10	7/12/2001	54	---	---	---	<0.19	<0.19	<0.19	<0.19	<0.50	<0.50	<0.50	<0.50	<20	---	---	<10	---	---	---	---	---	---	---
GP-6	6	7/12/2001	<51	---	---	---	<0.25	<0.25	<0.25	<0.25	<0.005	<0.005	<0.005	<0.005	<0.20	---	---	<0.10	---	---	---	---	---	---	---
GP-6	14	7/12/2001	270	---	---	---	<0.18	<0.18	4.8	5.7	<0.50	<0.50	<0.50	<0.50	<20	---	---	<10	---	---	---	---	---	---	---
GP-8	6	7/13/2001	1300	---	---	---	<1.7	<1.7	17	57	<0.50	<0.50	<0.50	<0.50	<20	---	---	<10	---	---	---	---	---	---	---
GP-8	18	7/13/2001	310	---	---	---	1.6	<0.22	5.3	2.7	<0.50	<0.50	<0.50	<0.50	<20	---	---	<10	---	---	---	---	---	---	---
GP-9	12	7/12/2001	<40	---	---	---	<0.20	<0.20	<0.20	<0.20	<0.005	<0.005	<0.005	<0.005	<0.20	---	---	<0.10	---	---	---	---	---	---	---
GP-9	20	7/12/2001	nd	---	---	---	nd	nd	nd	nd	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GP-9	32	7/12/2001	nd	---	---	---	nd	nd	nd	nd	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

* detection limits by EPA method 8010 ranged from 0.05 to 0.5 mg/Kg

Abbreviations:
nd - not detected
--- = not analyzed
<1.00 defined as not detected above specified laboratory reporting limit
1,2-DBA= 1,2-Dibromoethane
1,2-DCA=Dichloroethane
DIPE = Di-isopropyl ether
EtBE = Ethyl tertiary butyl ether
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
TAME = Tertiary amyl methyl ether
MtBE = Methyl tertiary butyl ether
TPHg = Total petroleum hydrocarbons as gasoline
TBA = Tertiary butyl alcohol

Table 3
Groundwater Analytical Results

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

Sample ID	Date Collected	Sample Depth (ft bgs)	TPHg	TPHd	TRPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MtBE 8020/8260	HOCs***	TAME	EtBE	DIPE	TBA	1,2-DBA	1,2-DCA	Ethanol	Cd	Cr	Ni	Pb	Zn	Lead
MW-1	10/7/1991	--	--	--	--	<0.3	1.0	<0.3	<0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	10/7/1991	--	--	--	--	60	70	18	110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	9/93*	--	270	--	--	65	22	13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/30/1995	--	1,300	300	700	450	6	20	25	--	nd	--	--	--	--	--	--	--	<0.005	0.07	0.11	0.013	0.11	--
MW-3 duplicate	10/9/1991	--	--	--	--	340	80	80	270	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3 duplicate	10/9/1991	--	--	--	--	420	70	80	250	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3 duplicate	9/93*	--	14,000	--	--	6,000	59	500	520	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	10/9/1991	--	--	--	--	500	200	70	260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	10/7/1991	--	--	--	--	2,450	690	1,040	2,460	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	9/93*	--	14,000	--	--	2,800	92	1,100	950	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1105-5	11/5/1993	--	--	530	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1105-6	11/5/1993	--	230	--	--	3	8	5.1	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OW	12/30/1995	--	210	<50^	5,200	8	10	<1	4	--	nd	--	--	--	--	--	--	--	<0.005	0.01	<0.04	0.01	31	--
MW-6	1/29/1996	--	300	69	800	<6	<0.5	<0.5	1	<3	nd	--	--	--	--	--	--	--	<0.005	0.05	0.07	0.006	0.06	--
MW-7	1/29/1996	--	8,900	3,200	4,900	1,800	<20	700	450	1300	nd	--	--	--	--	--	--	--	<0.005	0.03	<0.04	0.004	0.04	--
MW-8	1/29/1996	--	<50	<50	600	<0.5	<0.5	<0.5	<0.5	<3	nd	--	--	--	--	--	--	--	<0.005	0.05	0.06	0.005	0.05	--
MW-10	5/31/2002	--	<10,000	--	--	<100	<100	230	180	5000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP1W	7/11/2001	20	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.2	--	<0.005	<0.005	<0.005	<0.1	--	--	<0.5	--	--	--	--	--	--
GP-2W	7/11/2001	20	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.072	--	<0.0020	<0.0020	<0.0020	<0.04	--	--	<0.20	--	--	--	--	--	--
GP-2W	7/11/2001	34	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.022	--	<0.0010	<0.0010	<0.0010	<0.020	--	--	<0.10	--	--	--	--	--	--
GP-3W	7/11/2001	20	<0.50	--	--	<0.005	<0.005	<0.005	<0.005	2.8	--	<0.10	<0.10	<0.10	<2.0	--	--	<10	--	--	--	--	--	--
GP-4W	7/13/2001	20	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.015	--	<0.0010	<0.0010	<0.0010	<0.020	--	--	<0.10	--	--	--	--	--	--
GP-4W	7/13/2001	34	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0010	<0.0010	<0.0010	<0.020	--	--	<0.10	--	--	--	--	--	--
GP-5W	7/12/2001	20	<2.5	--	--	<0.025	<0.025	<0.025	<0.025	14	--	<0.25	<0.25	<0.25	<5.0	--	--	<25	--	--	--	--	--	--
GP-6W	7/12/2001	20	<1.0	--	--	<0.010	<0.010	<0.010	<0.010	11	--	<0.40	<0.40	<0.40	<8.0	--	--	<40	--	--	--	--	--	--
GP-8W	7/13/2001	20	<5.0	--	--	0.087	<0.050	<0.050	0.086	14	--	<0.50	<0.50	<0.50	<10	--	--	<50	--	--	--	--	--	--
GP-9W	7/12/2001	20	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.00055	--	<0.0010	<0.0010	<0.0010	<0.020	--	--	<0.10	--	--	--	--	--	--
GP-9W	7/12/2001	34	<0.050	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.0010	<0.0010	<0.0010	<0.020	--	--	<0.10	--	--	--	--	--	--

Notes:
(1) all concentrations are in parts per billion (micrograms per liter)
nd = not detected
^ = hydraulic oli was detected at <310 ug/L
na = Not analyzed
*** = Detection limits by EPA methos 601/8010 ranged from 0.5 to 5 ug/L.
** = Not reported at the time of well installation, but reported in the post-development sampling
* = Laboratory results per verbal communication from Rick Randall on January 16, 1996.
Abbreviations:
TPHg = Total petroleum hydrocarbons as gasoline
MtBE = Methyl tertiary butyl ether
8020 = EPA Method 8020
8260 = EPA Method 8260
TAME = Tertiary amyl methyl ether
EtBE = Ethyl tertiary butyl ether
DIPE = Di-isopropyl ether
TBA = Tertiary butyl alcohol
1,2-DBA= 1,2-Dibromoethane
1,2-DCA=Dichloroethane
NA = Not analyzed
<333 defined as not detected above specified laboratory reporting limit

Table 4
Summary of Receptor Wells

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, CA

Location Number	Location of Well	Well Owner/ Responsible Person	Well Use	Total Depth (feet, bgs)	Depth of Sanitary Seal (feet)	Date Well Installed	Screened Interval (feet)	Approximate Distance and Direction from Site	Field Verified
1	645 W. Cotati Avenue, Cotati, CA	Adolph Basaldella	domestic	165	unknown	7/28/1966	unknown	500 feet wsw	no
2	W. Cotati Avenue, Cotati, CA	K. Anderson	domestic	266	unknown	7/30/1969	unknown	600 feet sw	no
3	School Road, Cotati, CA	M. Mulligan	unknown	75	unknown	1948	unknown	1000 feet sw	no
4	150 St. Joseph Way, Cotati CA	St. Joseph's Church	irrigation	388	50	9/12/1978	unknown	500 feet ese	no
5	7971 Old Redwood Highway, Cotati, CA	Fred Andreoli	domestic	309	50	9/16/1983	unknown	750 feet se	no
6	1.54 miles s of Wilfred Avenue, 240 feet e of US Highway 101	Stephens and Rohnert	oil test	4,.035	unknown	1951	unknown	800 feet ne	no
7	187 Helman Lane, Cotati, CA	Fred Andreoli	domestic	223	20	10/15/1980	unknown	500 feet n	no
8	200 Helman Lane, Cotati, CA	Gerald Narron	domestic	170	23	9/12/1979	unknown	600 feet nnw	no
9	170 Helman Lane, Cotati, CA	Charles Badger	domestic	89	20	6/27/1978	unknown	700 feet nw	no
10	280 Helman Lane, Cotati, CA	Lorin Nibe	domestic	213	20	9/20/1974	unknown	800 feet nw	no
11	Helman Lane, Cotati, CA	DeWayne Strawther	domestic	70	unknown	1/13/1979	unknown	900 feet nw	no
12	363 Helman Lane, Cotati, CA	L.C. Batkin	domestic	52	unknown	1910	unknown	1000 feet nw	no
13	8239 Gravenstein Highway, CA	Richard Gardner	domestic	221	20	9/27/1979	unknown	900 feet wnw	no

Abbreviations:
n = north
s = south
e = east
w = west
bgs = below ground surface

Table 5
Dual-Phase Extraction Test Soil Vapor Analytical Data

76 Service Station Nol 5426
8510 Gravenstein Highway
Cotati, California

Date and Time	Sample ID	FID (ppmv)	DHS LUFT					
			TPHg (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	MtBE (ppmv)
5/30/2002 9:15	INF #1	2100	1,300	<1.6	3.3	1.7	<1.2	13
5/30/2002 21:00	INF #2	3,000	2,100	<1.6	6.3	3.8	<1.2	14
5/31/2002 6:30	INF #3	>10,000	6,100	<3.2	20.0	13.0	<2.4	1.4
5/31/2002 18:15	INF #4	>10,000	4,700	<7.8	<6.6	7.5	<5.8	<7.0

Explanations:
FID = Flame Ionization Detector
TPHg = Total Petroleum Hydrocarbons calculated as gasoline
DHS LUFT = Department of Health Services Leaky Underground Fuel Tank Method
MtBE = Methyl-tertiary butyl ether by EPA Method 8260
ppmv = Parts per million by volume

Table 6
Dual-Phase Extraction Test Estimated Mass Removal

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

				TPH as Gasoline			Benzene			MtBE		
Test Well ID	Date of DPE test	Hours Extracted (hours)	Average Flow Rate (scfm)	Influent Concentration (ppmv)	Pounds Removed During Test (lbs)	Cumulative pounds Removed (lbs)	Influent Concentration (ppmv)	Pounds Removed During Test (lbs)	Cumulative pounds Removed (lbs)	Influent Concentration (ppmv)	Pounds Removed During Test (lbs)	Cumulative pounds Removed (lbs)
MW-10	5/30/2002	12	16.81	1,300	4.37	4.37	<1.6	0.00	0.00	13	0.04	0.04
MW-10	5/30/2002	9.5	16.35	2,100	5.44	9.81	<1.6	0.00	0.00	14	0.03	0.07
MW-10	5/31/2002	6	13.03	6,100	7.95	17.77	<3.2	0.00	0.00	1.4	0.00	0.07
MW-10	5/31/2002	6	13.58	4,700	6.39	24.15	<7.8	0.00	0.00	<7.0	0.00	0.07
TOTAL HOURS EXTRACTED:				**33.5**								
TOTAL POUNDS REMOVED:						**24.15**			**0.00**			**0.07**

Explanations:
scfm = standard cubic feet per minute
ppmv = parts per million per volume
MtBE = Methyl-tertiary butyl ether
lbs. = pounds
TPH = Total Petroleum Hydrocarbons
Note:
Density of benzene = 7.3 pounds per gallon
Density of gasoline = 6.1 pounds per gallon
Density of MtBE = 6.2 pounds per gallon
Values reported as non-detect were assumed to zero for calculation purposes.

TABLE 7 - CONSTANT RATE AQUIFER PUMPING TEST RESULTS

76 Service Station No. 5426

8510 Gravenstein Highway

Cotati, California

Pumping Well and Pumping Parameters	Observation Well	Distance from Pumping Well (feet)	Response Observed	Maximum Drawdown (feet)	Evaluation of Drawdown (D) or Recovery (R) Data	Method of Analysis	Transmissivity T (ft^2 / day)	Hydraulic Conductivity (ft/day)	Specific Yield
MW-10	MW-2*	100	Y	0.040	D, R	Quick Neuman	--	--	--
Q = 0.5 gpm									
Pump On : 05/28/02	MW-7	23	Y	0.310	D	Quick Neuman	45.31	2.38	0.250
Pump Off : 05/29/02					R	Theis Recovery	67.15	3.53	--
Duration Pumped = 1440 minutes									
Saturated Thickness = 14 feet	MW-8*	138	Y	0.070	D, R	Quick Neuman	--	--	--
	MW-9	64	Y	0.120	D	Quick Neuman	79.46	4.18	0.228
					R	Theis Recovery	92.07	4.85	--
	OW*	53	Y	0.070	D, R	Quick Neumann	--	--	--
					Estimate of 'T' using the Distance-Drawdown Method		88.00	4.63	--
					AVERAGE ARITHMETIC ESTIMATES		74.40	3.92	0.239

Note: The wells indicated with an asterisk (*) were not included in the calculation of the average transmissivity (T)

Table 8
Remediation Feasibility Matrix

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

Estimated Duration of Remediation	Task	Cost	Number of Events	Total Cost	Option Feasible?	Comments
	Natural Attenuation (20 years)					
20 years	Quarterly Monitoring and Sampling	$20,000	20	$400,000	**No**	This option does not actively remove contaminants from groundwater or the vadose zone. In addition, it does not address plume migration. May be feasible following active remediation.
	System Installation Costs					
1 event	None					
	Annual System Operation Costs					
5 years	None					
	Site Closure Costs					
1 event	Well Destruction	$15,000	1	$15,000		
				$415,000		
	In Situ Biologic and/or Chemical Treatment (5 years)					
5 years	Quarterly Monitoring and Sampling	$20,000	5	$100,000	**No**	Option does not address petroleum hydrocarbon and MtBE impacts in the vadose zone. It does not provide for plume migration control.
event	Injecton of oxidizers/cultures	$10,000	10	$100,000		
units	Chemical oxidizers/biologic cultures	$10,000	10	$100,000		
	Site Closure Costs					
1 event	Well Destruction	$15,000	1	$15,000		
				$315,000		
	Dual Phase Extraction (5 years)					
5 years	Quarterly Monitoring and Sampling	$20,000	5	$100,000	**Yes**	This option will remove petroleum hydrocarbons and MtBE adsorbed to soil in the vadose zone and dewatering will remove dissolved petroleum hydrocarbons and MtBE in groundwater and adsorbed to soil in the saturated zone. It will also provide plume migration control.
	System Installation Costs, DPE Wells					
1 event	Design & Permit	$15,000	1	$15,000		
1 event	System Installation	$75,000	1	$75,000		
1 event	Equipment Purchase	$100,000	1	$100,000		
1 event	DPE Well Installation	$20,000	1	$20,000		
	Annual System Operation Costs, DPE					
2 years	Operations and Maintenance	$40,000	2	$80,000		
2 years	Utility Charges for gas and power	$15,000	2	$30,000		
2 years	Annual Carbon Replacement	$5,000	2	$10,000		
2 years	Annual Permit Fees	$1,000	2	$2,000		
	Site Closure Costs					
1 event	Well Destruction	$22,000	1	$22,000		
1 event	System Removal & Compound Demo	$5,000	1	$5,000		
				$459,000		

Table 8
Remediation Feasibility Matrix

76 Service Station No. 5426
8510 Gravenstein Highway
Cotati, California

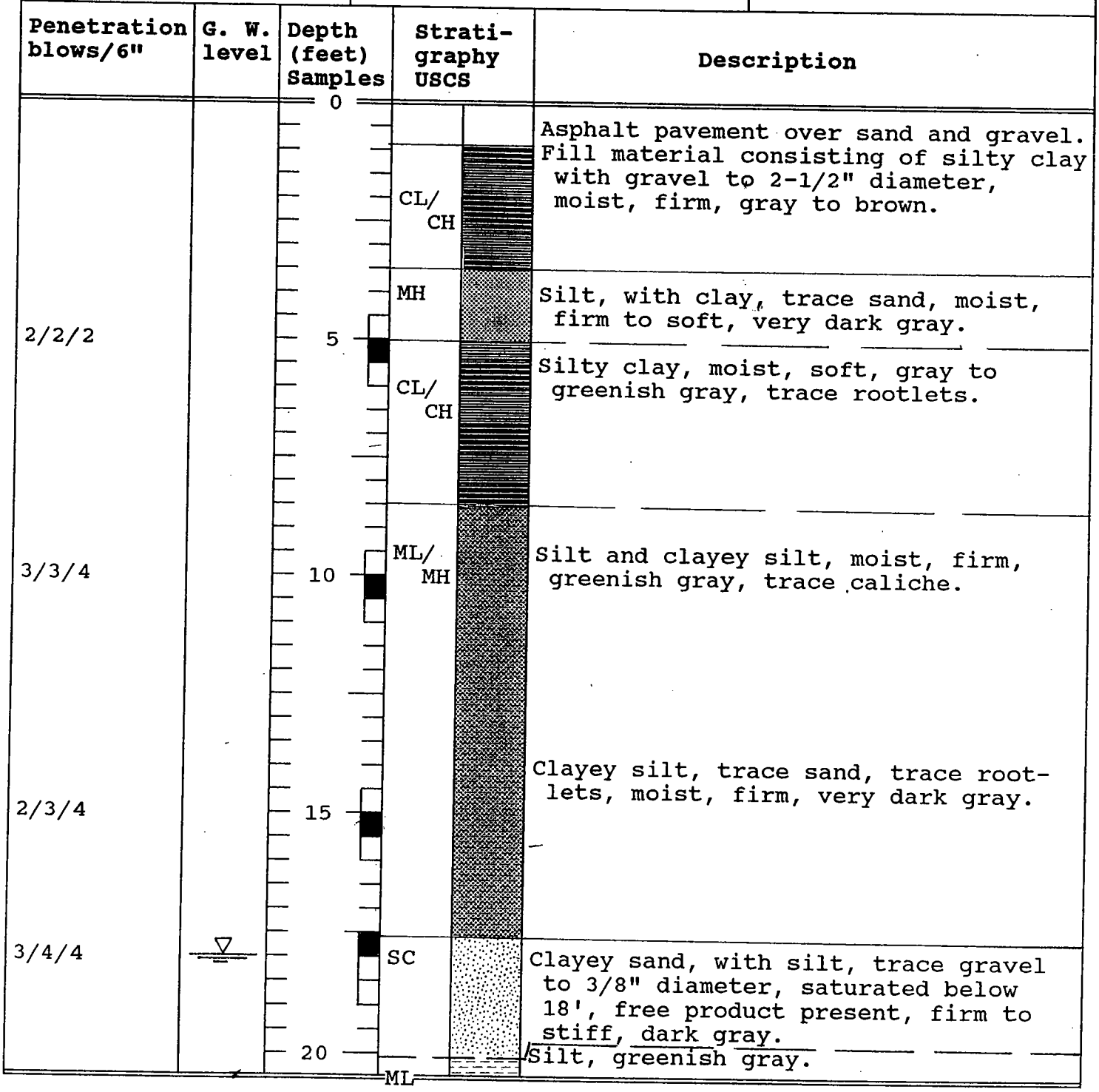
Estimated Duration of Remediation	Task	Cost	Number of Events	Total Cost	Option Feasible?	Comments
	Soil Vapor Extraction and Air Sparge (5 Years)					
5 years	Quarterly Monitoring and Sampling	$20,000	5	$100,000	**No**	This option will remove petroleum hydrocarbons adsorbed to soil in the vadose zone and will destory dissolved petroleum hydrocarbons and MtBE in groundwater. However, this alternative will not provide plume control or prevent off-site migration of contamination
	System Installation Costs, AS Wells					
1 event	Design & Permit	$15,000	1	$15,000		
1 event	System Installation	$75,000	1	$75,000		
1 event	Equipment Purchase	$75,000	1	$75,000		
10 wells	Well Installation 7 AS and 3 SVE/AS wells	$35,000	1	$35,000		
	Annual System Operation Costs					
2 years	Operations and Maintenance (SVE/AS)	$35,000	2	$70,000		
2 years	Utility Charges for gas and power	$15,000	2	$30,000		
2 years	Annual Permit Fees	$1,000	2	$2,000		
	Site Closure Costs					
1 event	Well Destruction	$32,000	1	$32,000		
1 event	System Removal & Compound Demo	$5,000	1	$5,000		
				$439,000		

APPENDIX A
SOIL BORING AND WELL COMPLETION LOGS

Corrective Action Plan
76 Station No. 2705426
8510 Gravenstein Highway
Cotati, California
SECOR Project No.: 77CP.65426.01.0002

BORING LOG

Project No. KEI-P90-1003	Boring & Casing Diameter 9" 2"	Logged By W.W.
Project Name Unocal 15599 Hesperian San L	Well Cover Elevation	Date Drilled 4/22/91
Boring No. MW3	Drilling Method Hollow-stem Auger	Drilling Company EGI



BORING LOG

Project No. KEI-P90-1003	Boring & Casing Diameter 9" 2"	Logged By W.W.
Project Name Unocal 15599 Hesperian San L	**Well Cover Elevation**	**Date Drilled** 4/22/91
Boring No. MW3	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS		Description
			ML/ MH		Clayey silt, saturated, porous, greenish gray.
5/7/8					Clay, trace sand and rootlets, moist, stiff, very dark gray and very dark grayish brown mottled.
4/5/6			CL/ CH		Clay, trace sand and rootlets, moist, stiff, gray to dark gray.
		25			
		30			
		35			
		40			TOTAL DEPTH: 25'

BORING LOG

Project No. KEI-P90-1003	**Boring & Casing Diameter** 12" 6"	**Logged By** D.L. JG
Project Name Unocal # 7004 15599 Hesperian Blvd, San Leandro	**Well Cover Elevation** N/A	**Date Drilled** 4-15-92
Boring No. RW1	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Asphalt pavement over sand and gravel base.
				Clay, sand and gravel with cobbles to 8 inches in diameter, very dark grayish brown and black (fill).
			SM	Silty sand, sand is very fine to fine-grained, moist, loose, dark olive gray.
2/3/5		5	CL	Silty clay, moist, firm, dark greenish gray.
			MH	Silt with clay, estimated at 10-15% fine-grained sand, moist, stiff, dark olive gray.
			SW	Well graded sand, dry, loose, light olive brown.
3/4/5			SW/ ML	Well graded sand, moist, loose, dark olive gray with lenses of sandy silt to 1 inch thick. Silt is moist, firm, dark olive gray.
		10	ML	Silt with sand, trace clay, sand is very fine-grained, moist, firm, dark olive gray.
3/4/6			MH	Clayey silt, estimated at 10-15% sand, moist, stiff, black, grades to dark olive gray.
NO BLOW COUNT DATA - CONTINUOUSLY CORED	▽		CH	Silty clay, moist, stiff, very dark gray to black.
		15	MH	Clayey silt very moist to wet, stiff, black with molds and root holes.
			CH	Silty clay, trace fine-grained sand, moist, very stiff, dark olive gray and very dark gray, mottled.
				Clay with silt, moist, very stiff, very dark grayish brown and very dark gray, mottled.
		20	SM	Silty sand, estimated at 15-20% silt, sand is fine to medium grained, saturated, medium dense, olive and olive brown, mottled.

BORING LOG

Project No. KEI-P90-1003	**Boring & Casing Diameter** 12" 6"	**Logged By** D.L. JG
Project Name Unocal #7004 15599 Hesperian Blvd, San Leandro	**Well Cover Elevation** N/A	**Date Drilled** 4-15-92
Boring No. RW1	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
			SM	Silty sand as above.
			CH	Clay with trace silt and sand, locally trace caliche, moist, hard, very stiff, black.
		25	CL	Silty clay with root holes and organic matter, moist, stiff, olive gray.
			CH	Sandy silty clayey sand, significant caliche development locally, moist, very stiff to hard, olive and olive brown, mottled.
		30		TOTAL DEPTH: 29.5'
		35		
		40		

LOCATION 850 Gravenstein Hwy, Cotati BORING DEPTH 20' **BORING NO.** MW-6

SURFACE ELEVATION 104.26 DATE BEGAN 1-24-96 SHEET 1 OF 1

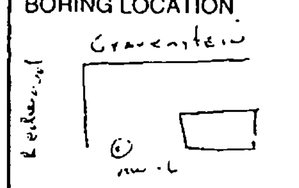
DRILLING METHOD hollow stem auger DATE FINISHED 1-24-96

SAMPLING METHOD split spoon LOGGED BY T. Watchew

EDITED BY

CHECKED BY

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								Top soil for 6". Compacted Rock base to @ 3.5 ft. (drillers comment)
4.0			0/-/0	6/9/10		SP		Brown clayey sand - (moist) turning to clay
		▽						▼ static water level at 6.90 feet bsg -
8.0		▼				CL		drill says hit water @ 9 ft bsg (1-24-96) 9:10 AM
			0/5/1.6	6/11/12				Brown silty sandy clay (moist)
12.0						CL		(driller says tighter at 13')
			0/-/15.9	10/18/20		CL		Brown/TAN slightly mottled clay - (moist)
16.0								
			0/4.0/0	14/24/21		CL / GP / CL		1 foot layer of gravelly sand. (saturated) Clay - Brown clay - saturated
20.0								End of boring. Installed monitoring well with 5 feet of 2-inch well casing and 15 feet of 2-inch screen.
24.0								
28.0								
32.0								

ITSI Driller - Ross Williams Helper - Louie ORZALLI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT Tosco / Cotati

PROJECT NO. 95-137

LOCATION 8510 Gravenstein Hwy, Cotat. BORING DEPTH 20ft

BORING NO. MW-7

SURFACE ELEVATION 103.83 DATE BEGAN 1-24-96

SHEET 1 OF 1

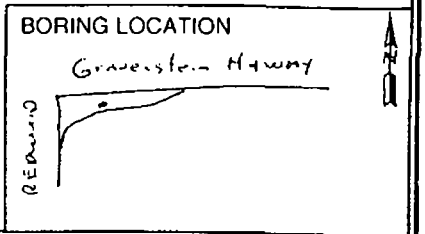
DRILLING METHOD hollow stem Auger DATE FINISHED 1-24-96

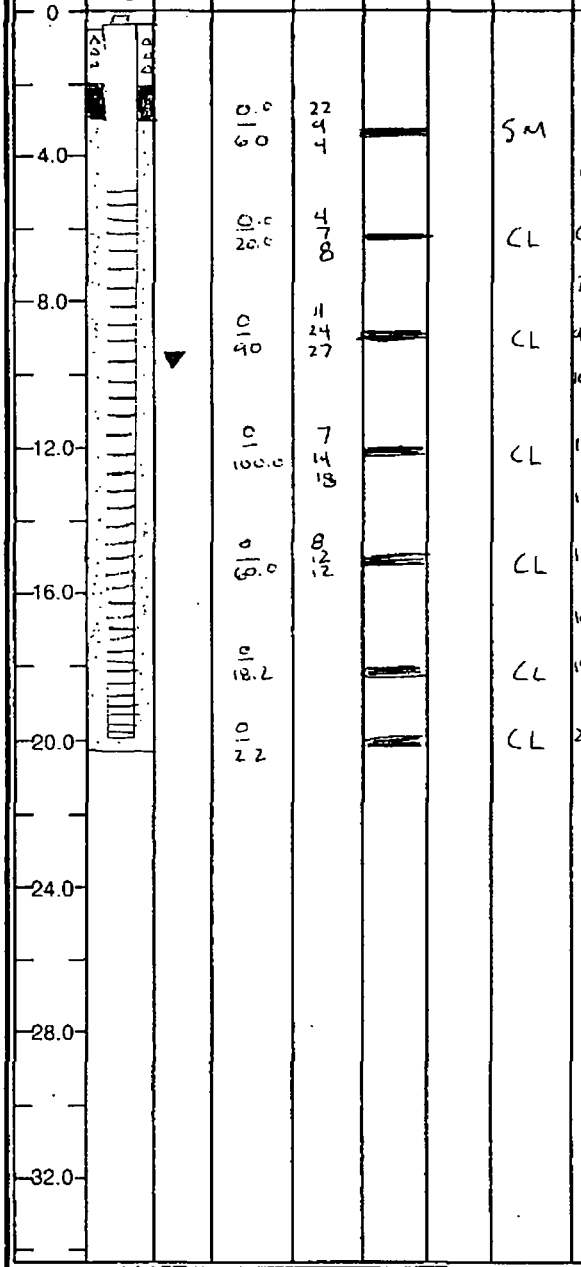
SAMPLING METHOD split spoon LOGGED BY T Watchers

EDITED BY

CHECKED BY

BORING LOCATION





DESCRIPTION

Grass + top soil

3.0 Brown sandy silt

4.5 PID = 30 ppm (blow counts 5-5-4)

6.0 Gray silty CLAY

7.5 Gray/brown mottled clay (blow counts 11-24-27)

9.0 Gray clay

10.5 Gray clay

12.0 Gray clay (stiff, organic inclusions)

13.5 (blow counts 7-11-19, PID = 60ppm)

15.0 Gray/tan mottled clay

16.5 (blow counts 7-12-14)

18.0

20.0 Gray clay (inter-bedded with sand, gravles brown)

Driller noted strong odor in borehole.

Rain did not allow PID readings of B-zone or borehole.

END of boring. Constructed monitoring well with 5-feet of 2-inch well casing and 15-feet of 2-inch screen

ITSI

Driller - Russ Williams

Helper - Louie ORZALLI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT Tosco / Cotat.

PROJECT NO. 95-133

LOCATION 8510 Gravenstein Hwy, Cotati | BORING DEPTH 20ft. | **BORING NO.** MW-8

SURFACE ELEVATION 103.21 | DATE BEGAN 1-24-96 | SHEET 1 OF 1

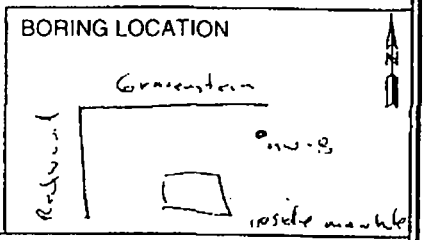
DRILLING METHOD Hollow Stem Augers | DATE FINISHED 1-24-96

SAMPLING METHOD split spoon | LOGGED BY J. Watchers

EDITED BY

CHECKED BY

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								
4.0		▽	0 / 1 /	5 / 10			SP	Red, brown silty sand - wet, some small roots
								STATIC WATER LEVEL 6.9 ft bsg driller said hit water 1-24-96 (10:50)
8.0								
			0 / 1 /	11 / 14 / 25			SP	Red, brown silty sand, wet.
12.0								
								(driller said change @ 13 feet
16.0			0 / 1 / 1 / 0	refusal			CL	Brown sandy/silty clay - wet / layers of sand-silt split spoon wet more water in hole than move
				11 / 17 / 24			CL	Brown sandy/silty clay - wet
20.0			0 / 1 / 1 / 0	11 / 17 / 24			CL	Brown sandy/silty clay with sandy layers
								End of boring. Installed monitoring well with 4 feet of 2-inch well casing and 15-feet of screen.
24.0								
28.0								
32.0								

ITSI

Driller - Ross Williams

Helper - Dave ORZALLI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT Tosco / Cotati

PROJECT NO. 95-132

LOCATION 8510 Gravenstein Hwy [illegible] | BORING DEPTH 16 ft | **BORING NO. SB-1**

SURFACE ELEVATION ______ | DATE BEGAN 1-25-96 | SHEET 1 OF 1

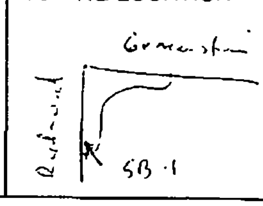
DRILLING METHOD Small diameter Auger | DATE FINISHED 1-25-96

SAMPLING METHOD Split spoon | LOGGED BY T. WATCHERS

EDITED BY ______

CHECKED BY ______

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								Grass and top soil compacted - ROAD BASE
4.0			0 / 0	5 4 5	▬			5.0 ft Brown sandy clay, moist
8.0		▽	0 / 21	7 12 9	▬			8.0 ft Gray sandy clay - dry
12.0			0 6 480	4 5 6	▬			- drilled to 13 feet to allow water to enter the well for water sample collection. sample at 15 feet / Gray-green silty clay. END of Boring 16 ft. Slight gasoline odor. Back Filled with cement
16.0								
20.0								
24.0								
28.0								
32.0								

ITSI Driller - Ross Williams
Helper - Louie Orzalli

PROJECT Tosco / Cotati

PROJECT NO. 95-133

INNOVATIVE TECHNICAL SOLUTIONS, INC.

LOCATION 8510 Gravenstein Hyway

BORING DEPTH 15ft

BORING NO. SB-2

SURFACE ELEVATION ______

DATE BEGAN 1-25-96

SHEET 1 OF 1

DRILLING METHOD small diameter auger

DATE FINISHED 1-25-96

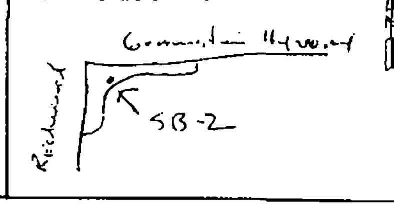
SAMPLING METHOD split spoon

LOGGED BY T. Watchorn

EDITED BY ______

CHECKED BY ______

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								Grass + top soil compacted top fill
4.0			0 .3	1 1	—			5.0 collect sample brown sandy silt wet
8.0		▼						driller says water here
			0 200	4 5 7	—			10.0 Brown sandy silt (wet) grading into moderate stiff gray mottled clay (moist)
12.0			0 1.5 200	4 4 6	—			15.0 gray-green silty clay (moist) got water into the hole & sample End of boring - back filled with cement
16.0								
20.0								
24.0								
28.0								
32.0								

ITSI

Driller - Ross Williams

Helper - Louie ORZALLI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT 95-133

PROJECT NO. Tosco / Cotati

LOCATION 6510 Greenstein Hwy · BORING DEPTH 15 ft. · **BORING NO.** SB-3

SURFACE ELEVATION ______ · DATE BEGAN 1-25-96 · SHEET 1 OF 1

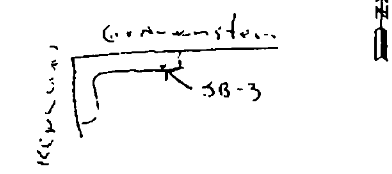
DRILLING METHOD small diameter augers · DATE FINISHED 1-25-96

SAMPLING METHOD split spoon · LOGGED BY T. Watchers

EDITED BY ______

CHECKED BY ______

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								Top soil
								rocks
4.0			0 / 100	4 5 5	▬			5.0 - gray sandy clay, (wet, strong hydro. odor)
		▽						Driller said @ 7.5 ft. was encountered water
8.0								
			0 / 490	5 7 8 8	▬			10.0 TAN + Grey mottled CLAY · (odor moderate stiff, moist) some light ...
12.0								
			0 4.7 534	5 5 6	▬			15.0 Grey/green silty Clay (odor, moist, med. stiff)
16.0								End of boring. Some light ... Back filled with cement.
20.0								
24.0								
28.0								
32.0								

ITSI Driller - Russ Williams
Helper - Louie ORAZILI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT Turco / Cotati

PROJECT NO. 95-133

LOCATION 8510 Gravenstein Hyway, Cotati | BORING DEPTH 15 | **BORING NO.** SB-4

SURFACE ELEVATION ________ | DATE BEGAN 1-25-96 | SHEET 1 OF 1

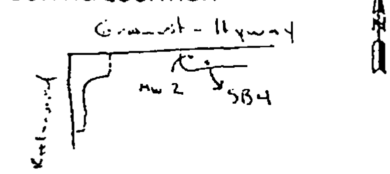
DRILLING METHOD Small diameter Augers | DATE FINISHED 1-25-96

SAMPLING METHOD split spoon | LOGGED BY T. Watchen

EDITED BY ________

CHECKED BY ________

BORING LOCATION



DEPTH (FEET)	WELL CONSTRUCTION	WATER LEVEL	PID (PPM) B-zone/stem/sample	BLOW COUNTS (BLOWS/FOOT)	SAMPLE TYPE	U.S.C.S.	LITHOLOGY	DESCRIPTION
0								Top soil /
3.0				2 3 4				3.0 Dark brn silty sand (moist)
4.0			0 / .6					4.5 - (1,1,1) Dark brn silty sand (moist / wet)
			0 / 1.3	5 7 10				6.0 gray mottled silty clay - moist - soft (grades into)
								7.5 (5,7,8) gray (green) silty sand (moist)
8.0			0 / 2.5	3 4 8				9.0 Gray silty sand (moist)
		▼	860					10.5 (3,4,6) grades to sandy clay (odor, moist)
12.0			400	3 5 9				12.0 Gray silty clay (moist)
			500					13.5 (3,5,9) Gray silty clay (moist) + odor
			420	3 5 6				15.0 Gray silty / sandy clay (moist, odor)
16.0								End of boring Back filled with cement.
20.0								
24.0								
28.0								
32.0								

ITSI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

PROJECT Tosco / Cotati

PROJECT NO. 95-133

Project: TOSCO #05426			Log of Boring/Monitoring Well: **GP-1**
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896		Page 1 of 1
Subcontractor and Equipment: Precision / SD-1	Logged By: FM	Drawn By: PM	
Sampling Method: Direct Push	Monitoring Device: 580B OVM		Comments: Groundwater: GP1W-20' sampled at 16:53
Start Date/Time: 7/11/01 15:30	Finish Date/Time: 7/11/01 16:59		
First Water (bgs): 19.1 ft. bgs	Stabilized Water Level (bgs): 13.70 ft. bgs (after 15 min)		

Surface Elevation: Casing Top Elevation:

Notes	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment Details
HAND AUGERED TO 5'		0.0	0	ASPHALT	Filled with grout to surface
			1	BLACK (2.5 Y 2/0) SILTY CLAYEY SAND (SM), trace gravel, fine - grained sand, medium dense, damp, fill with debris. (5, 40, 30, 25)	
		6.0	3	DARK GRAY SILTY (10 YR 4/1) SAND (SM), fine - grained sand, medium dense, moist. (0, 80, 20, 0)	
	1.5		5	BROWN (10 YR 5/3) SILTY SAND (SM), fine - to coarse - grained sand, very dense, moist. (0, 85, 15, 0)	
		1.7	7		
			8.5	BROWN (10 YR 5/3) SANDY SILT (ML), fine - grained sand, very dense, moist. (0, 15, 85, 0)	
	4.5	1.7	10		
			11	Grades DARK GRAY (10 YR 4/1) with brown mottling.	
		3.0	12		
GP1W-20'			13.5	BROWN (10 YR 5/3) SILTY SAND (SM), fine - grained sand, medium dense, moist, hydrocarbon odor. (0, 85, 15, 0)	
	2.5	98	15		
			18	Grades with increasing silt.	
		1	19	DARK OLIVE BROWN (2.5 Y 3/3) SAND (SP), trace silt, fine - grained sand, loose, wet. (0, 95, 5, 0)	
			20	OLIVE BROWN (2.5 Y 4/3) SANDY SILT (ML/CL), grading to clayey silt, grades medium to very stiff, wet. (0, 25, 75, 0) to (0, 5, 70, 25)	
		0	22	Boring terminated at 22 ft. bgs	

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

S:\TOSCO\05426\GP-1\1.dwg

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: Date:

Project: TOSCO #05426	Log of Boring/Monitoring Well: GP-2
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896
Subcontractor and Equipment: Precision / SD-1	Logged By: FM · Drawn By: PM
Sampling Method: Direct Push	Monitoring Device: 580B OVM
Start Date/Time: 7/11/01 08:15	Finish Date/Time: 7/11/01 13:05
First Water (bgs): 20 ft. bgs	Stabilized Water Level (bgs): 12.40 ft. bgs (after 15 min.)

Page 1 of 2

Comments: Groundwater:
GP2W-20' sampled at 10:55
GP2W-34' sampled at 11:45

Surface Elevation: Casing Top Elevation:

Notes	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment Details
HAND AUGERED TO 5'			0	ASPHALT	Filled with grout to surface
			1	YELLOWISH BROWN (10 YR 5/4) SILTY CLAYEY SAND (SM), trace fine gravel, fine - to coarse - grained sand, loose, moist. (5, 40 15, 40)	
		2.6	4	Grades to LIGHT YELLOWISH BROWN (10 YR 6/4) SILTY SAND (SM), fine - grained sand, dense, wet. (0, 80, 20, 0)	
	3.0	2.8	6–7	LIGHT YELLOWISH BROWN (10 YR 6/4) SAND (SP), fine - to coarse - grained sand, loose, wet. (0, 100, 0, 0)	
			8	PALE BROWN (10 YR 6/3) SILTY SANDY CLAY (ML/CL), medium stiff, moist, high plasticity. (0, 15, 15, 70)	
	2.0	2.1	10		
GP2W-20'	2.0	2.2	13	Grades with increasing clay, roots.	
2nd GW Interval; GP2W-34'	2.0	1.9	16	Grades to SANDY CLAY (CL), stiff. (0, 20, 10, 70)	
	2.0	1.8	19	DARK BROWN (10 YR 3/2) SAND (SP), trace clay, fine - to coarse - grained sand, loose, wet. (0, 95, 0, 5)	
			21	BROWN (10 YR 4/3) CLAY (CL), with silt and fine - grained sand, very stiff, low plasticity, moist. (0, 10, 10, 80)	
	3.25	1.2	22	DARK BROWN (10 YR 3/2) SAND (SP), fine - to coarse - grained sand, loose, wet. (0, 95, 5, 0)	
		0	24	OLIVE BROWN (2.5 Y 4/3) CLAY (CL), trace silt, soft to medium stiff, moist, high plasticity. (0, 0, 5, 95)	
	2.0	1.7	25		
			27	Grades to DARK GRAY (10 YR 4/1) CLAYEY GRAVEL (GC), with fine round gravels (stringer).	
		1.0	28	Grades to CLAY (CL).	
			29	OLIVE BROWN (2.5 Y 4/3) GRAVELLY SAND (SW), fine gravel, with fine - grained sand, dense, wet. (25, 65, 10, 0)	

K:\TOSCO\05426 GP-1/1112

SECOR

Reviewed By: [signature] Date: 8-21-01
Revised By: Date:

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

Project:	TOSCO #05426		Log of Boring/Monitoring Well: GP-2
Boring Location:	8510 Gravenstein, Cotati, CA	Project No: 006.03896	Page 2 of 2
Subcontractor and Equipment:	Precision / SD-1	Logged By: FM / Drawn By: PM	
Sampling Method:	Direct Push	Monitoring Device: 580B OVM	Comments: Groundwater: GP2W-20' sampled at 10:55 GP2W-34' sampled at 11:45
Start Date/Time:	7/11/01 08:15	Finish Date/Time: 7/11/01 13:05	
First Water (bgs):	20 ft. bgs ▽	Stabilized Water Level (bgs): 12.40 ft. bgs (after 15 min.) ▼	

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft2	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment Details
				30		OLIVE BROWN (2.5 Y 4/3) SAND (SP), with silt, fine - to coarse - grained sand, medium dense, wet. (0, 90, 10, 0)	
		4.25	0.5	31		(CL/SW/CL), in thin, alternating beds.	
				32		OLIVE BROWN (2.5 Y 4/3) SANDY SILTY CLAY (CL), very stiff, moist. (0, 25, 25, 50)	
		3.0		33			
			0.7	34		LIGHT OLIVE BROWN (2.5 Y 5/3) CLAYEY SAND/SANDY CLAY (CL/SC), fine - to coarse - grained sand, stiff, moist, alternating 2" - 6" beds. (0, 20, 20, 60) to (0, 45, 20, 35)	
				35			
				36		Grades to OLIVE BROWN (2.5 Y 4/3) SILTY SAND (SM), loose, wet. (0, 85, 15, 0)	
				37			
				38		GRAYISH BROWN (2.5 Y 5/2) SILTY SAND (SM/ML), with clay, fine - grained sand, soft, wet. (0, 45, 45, 10)	
			0.7	39			
				40		GRAYISH BROWN (2.5 Y 5/2) SANDY CLAY (CL), with silt, fine - grained sand, very dense, moist, high plasticity. (0, 10, 10, 80)	
				41			
		3.5	0.7	42			
				43			
			0.5	44			
				45		Grades to SILTY CLAY, trace fine - grained sand, dense, high plasticity. (0, 5, 15, 80)	
				46		Boring terminated at 46 ft. bgs	
				47			
				48			
				49			
				50			
				51			
				52			
				53			
				54			
				55			
				56			
				57			
				58			
				59			
				60			

Filled with grout to surface

REGISTERED GEOLOGIST
JAMES G. RITCHIE
No. 4974
expires 5-31-02
STATE OF CALIFORNIA

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: _____ Date: _____

S:\TOSCO\#421, GP-1\7812

Project: TOSCO #05426			Log of Boring/Monitoring Well: **GP-3**
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896		Page 1 of 1
Subcontractor and Equipment: Precision / SD-1	Logged By: FM	Drawn By: PM	
Sampling Method: Direct Push	Monitoring Device: 5808 OVM		Comments: Groundwater: GP3W-20' sampled at 15:10
Start Date/Time: 7/11/01 13:45	Finish Date/Time: 7/11/01 15:25		
First Water (bgs): 19.9 ft. bgs	Stabilized Water Level (bgs): 12.3 ft. bgs (after 15 min.)		

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment Details
				0		ASPHALT	Filled with grout to surface
			0.8	0–5	SC	DARK BROWN (10 YR 4/3) CLAYEY SAND (SC), with silt, trace gravel, fine gravel, fine - grained sand, loose, moist. (5, 70, 10, 15)	
		3.5	0.5	5–7	CL	GRAYISH BROWN (2.5 Y 3/2) CLAY (CL), with silt, trace sand, very stiff, moist. (0, 5, 10, 85)	
				7–8	SM	LIGHT OLIVE BROWN (2.5 YR 5/3) SILTY SAND (SM), with clay, fine - grained sand, dense, damp. (0, 65, 25, 10)	
		2.5	0.4	8–11	SM/CL	OLIVE BROWN (2.5 Y 4/3) SILTY SAND/SANDY SILT (SM/CL), fine - grained sand, dense, moist. (0, 45, 45, 10)	
			0.2	11–11.5	SP	OLIVE BROWN (2.5 Y 4/3) SAND (SP), fine - to coarse - grained sand, loose, wet. (0, 100, 0, 0)	
GP3W-20'				11.5–15	SM	OLIVE BROWN (2.5 Y 4/3) SILTY SAND (SM), fine - to coarse - grained sand, medium stiff, moist. (0, 60, 40, 0)	
		2.5	5.1	15–20	CL	OLIVE BROWN (2.5 Y 4/3) SILTY CLAY (CL), trace fine - grained sand, very stiff, moist. (0, 5, 15, 80)	
			7.9	18			
				19–20	SP	DARK GRAYISH BROWN (2.5 Y 4/2) SAND (SP) fine - to medium - grained sand, trace silt, medium stiff, wet. (0, 95, 5, 0)	
		2.5	7.1	20–22	ML	GRAY BROWN (2.5 Y 5/2) CLAYEY SILT (ML), with fine - grained sand, very stiff, moist, wet. high plasticity. (0, 10, 60, 30)	
				22		Boring terminated at 22 ft. bgs	

REGISTERED GEOLOGIST
JAMES G. RITCHIE
No. 4974
expires 5-31-02
STATE OF CALIFORNIA

S:\TOSCO\05426, GP-3/1of1

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: Date:

Project: TOSCO #05426			Log of Boring/Monitoring Well: GP-4
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896		Page 1 of 2
Subcontractor and Equipment: Precision / SD-1	Logged By: FM	Drawn By: PM	
Sampling Method: Direct Push	Monitoring Device: 580B OVM		Comments: Groundwater: GP4W-20' sampled at 10:41 GP4W-34' sampled at 11:51
Start Date/Time: 7/13/01 09:54	Finish Date/Time: 7/13/01 12:15		
First Water (bgs): 20.8 ft. bgs ▽	Stabilized Water Level (bgs): 12.0 ft. bgs (after 15 min.) ▼		

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment Details
			2.0	0–2	SC/SM	VERY DARK GRAYISH BROWN (10 YR 3/2) SILTY CLAYEY SAND (SC/SM), with fine subrounded gravel, fine - grained sand, medium dense, moist. (10, 50, 20, 20)	Filled with grout to surface
			3.1	2–4	SC/SM		
			2.0	4–7	SC/SM	Grades with decreasing clay and gravel, wet with green mottling. (0, 80, 20, 0)	
		3.0 to 4.0	1.3	7–10	SC	DARK GREENISH GRAY (5 GY 4/1) CLAYEY SAND (SC), with silt, stiff to very stiff, moist, moderate to high plasticity clay, small rootlets. (0, 70, 10, 20)	
1st GW Interval ▽ GP4W-20'			1.3	10–13	CL	OLIVE BROWN (2.5 Y 4/4) CLAY (CL), with sand and silt, fine - grained sand, stiff, moist, moderate to high plasticity. (0, 15, 15, 70)	
		2.0		13–15	CL	Grades with increasing sand. (0, 20, 15, 65)	
2nd GW Interval ▽ GP4W-34'		2.0	1.1	15–17	CL	Grades with decreasing sand. (0, 5, 15, 80)	
		2.0	0.8	17–19	CL	Grades with increasing sand, trace fine gravel.	
		2.0		19–21	SP	OLIVE BROWN (2.5 Y 4/3) SAND (SP), trace silt, fine to coarse - grained sand, medium dense, wet. (0, 95, 5, 0)	
1st GW Interval ▽		1.5	0.8	21–22	ML	OLIVE BROWN (2.5 Y 4/3) SANDY SILT (ML), with clay, fine -grained sand, medium stiff, moist, moderate to high plasticity. (0, 30, 60, 10)	
No Recov.				22–26		No recovery.	
No Recov.							
		2.0		26–27	CL	DARK GRAY (N 3/0) CLAY (CL), with silt, medium stiff, moist, high plasticity. (0, 0, 10, 90)	

SECOR

Reviewed By: James G. Ritchie Date: 8-21-01

Revised By: _____ Date: _____

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

Project:	TOSCO #05426		Log of Boring/Monitoring Well: GP-4
Boring Location:	8510 Gravenstein, Cotati, CA	Project No: 006.03896	Page 2 of 2
Subcontractor and Equipment:	Precision / SD-1	Logged By: FM / Drawn By: PM	
Sampling Method:	Direct Push	Monitoring Device: 580B OVM	Comments: Groundwater: GP4W-20' sampled at 10:41 GP4W-34' sampled at 11:51
Start Date/Time:	7/13/01 09:54	Finish Date/Time: 7/13/01 12:15	
First Water (bgs):	20.8 ft. bgs ▽	Stabilized Water Level (bgs): 12.0 ft. bgs (after 15 min.) ▼	

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
		2.0	0.4	30		(CL)
				31		SANDY CLAY/CLAYEY SAND (SC/CL), fine - to coarse - grained sand, dense, wet. (0, 15, 15, 70) to (0, 55, 15, 30)
2nd GW Interval ▽		0	0.2	32		GRAVEL (GP), rounded clean gravels, fine pea size reddish chert, white quartz and black chert. (100, 0, 0, 0)
			0.3	33		OLIVE BROWN (2.5 Y 4/4) GRAVELLY SAND (SW), with silt, fine gravel, fine - to coarse - grained sand, loose, wet, gray mottling. (20, 70, 10, 0)
				34		As above, GRAVEL (GP)
		0	0.4	35		As above, GRAVELLY SAND (SW)
				36		OLIVE GRAY (5 Y 4/2) SANDY SILT/SILTY SAND (ML/SM), fine - grained sand, dense, stiff, wet, moist, medium plasticity. (0, 50, 50, 0)
				37		
				38		
				39		Grades to LIGHT OLIVE BROWN (2.5 Y 5/3) SILTY SAND (SM), fine - to coarse - grained sand, moderately stiff, wet. (0, 60, 40, 0)
		3.0	0.1	40		
		1.5		41		LIGHT OLIVE BROWN (2.5 Y 5/3) GRAVELLY SANDY SILT (ML), with clay, fine rounded gravels, fine - grained sand, very dense, wet. (30, 15, 45, 10)
			0	42		
				43		
				44		
		1.5	0	45		Grades with decreasing gravel, increasing clay. (10, 10, 50, 30)
				46		Boring terminated at 46 ft. bgs
				47		
				48		
				49		
				50		
				51		
				52		
				53		
				54		
				55		
				56		
				57		
				58		
				59		
				60		

Boring Abandonment Details: Filled with grout to surface

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

ScTOSCO#5426, GP-4.2of2

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: _____ Date: _____

Project:	TOSCO #05426		Log of Boring/Monitoring Well: GP-5
Boring Location:	8510 Gravenstein, Cotati, CA	Project No: 006.03896	Page 1 of 1
Subcontractor and Equipment:	Precision / SD-1	Logged By: FM / Drawn By: PM	
Sampling Method:	Direct Push	Monitoring Device: 580B OVM	Comments: Groundwater: GP5W-20' sampled at 13:35
Start Date/Time:	7/12/01 12:40	Finish Date/Time: 7/12/01 13:35	
First Water (bgs):	~19.0 ft. bgs	Stabilized Water Level (bgs): 12.60 ft. bgs (after 15 min.)	

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Tsf/ft²	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
				0		CONCRETE
HAND AUGERED TO 5'				1		BROWN (10 YR 5/3) GRAVELLY SILTY SAND (SM) fine subrounded gravel, fine - grained sand, loose, wet. (20, 45, 30, 0)
				2		
				3		
				4		
			1.3	5		Grades GRAYISH BROWN (10 YR 5/2) fine - grained sand, medium dense, wet. (0, 85, 15, 0)
STANDING WATER @ 5'		0	8.3	6		Grades to SANDY CLAY (CL) fine - grained sand, soft (0, 25, 15, 60)
				7		
				8		GRAYISH BROWN (10 YR 5/2) CLAYEY SAND (SC) fine - grained sand, loose, moist. (0, 80, 5, 15)
				9		Grades to GRAYISH BROWN (10 YR 5/2) SANDY CLAY (CL), fine - grained sand, dense, moist. (0, 20, 10, 70)
		2.7	239	10		GRAYISH BROWN (10 YR 5/2) CLAYEY SAND (SC) fine - grained sand, dense, moist, low to medium plasticity, strong hydrocarbon odor, increasing clay. (0, 75, 10, 15)
				11		
GP5W-20'		3.0	349	12		SANDY CLAY (CL) fine - grained sand, soft, strong hydrocarbon odor. (0, 25, 15, 60)
				13		
				14		
		3.2	370	15		Grades DARK GRAYISH BROWN (2.5 Y 4/2) strong hydrocarbon odor.
				16		
		3.0		17		
			68	18		
				19		
		0		20		VERY DARK GRAY BROWN (2.5 Y 3/2) SAND (SW) with gravel, trace silt, fine rounded gravel, fine - to coarse - grained sand, loose, wet, faint hydrocarbon odor. (10, 85, 5, 0)
		2.25	45	21		OLIVE BROWN (2.5 Y 4/3) SILTY CLAY (CL) stiff, moist, roots. (0, 0, 15, 85)
				22		Boring terminated at 22 ft. bgs
				23		
				24		
				25		
				26		
				27		
				28		
				29		
				30		

Boring Abandonment Details: Filled with grout to surface

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: Date:

S:\TOSCO\#426, GP-5.fm1

Project: TOSCO #05426			Log of Boring/Monitoring Well: GP-6
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896		Page 1 of 1
Subcontractor and Equipment: Precision / SD-1	Logged By: FM	Drawn By: PM	
Sampling Method: Direct Push	Monitoring Device: 580B OVM		Comments: Groundwater: GP6W-20' sampled at 15:15
Start Date/Time: 7/12/01 13:50	Finish Date/Time: 7/12/01 15:30		
First Water (bgs): 19.3 ft. bgs	Stabilized Water Level (bgs): 13.10 ft. bgs (after 15 min.)		

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft^2	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
				0		LANDSCAPE SOIL
				1		DARK BROWN (10 YR 3/3) GRAVELLY SILTY SAND (SM) fine rounded gravel, fine - grained sand, medium dense, moist, concrete, some large cobbles to 4" diameter. (25, 45, 30, 0)
			1.0	2		
				3		
				4		
		0.0	1.3	5		Grades to OLIVE (2.5 Y 5/3) SILTY SAND (SM) fine - grained sand, very soft, wet. (0, 65, 35, 0)
				6		
		1.7	1.2	7		
				8		OLIVE (2.5 Y 5/3) SILTY SAND (ML) fine - grained sand, medium dense, moist, brown mottling. (0, 65, 35, 0)
		4.0	28.0	9		OLIVE (2.5 Y 5/3) SILTY CLAY (CL) very stiff, moist, medium high plasticity, hydrocarbon odor. (0, 0, 15, 85)
				10		
				11		
				12		Grades mottled gray with strong hydrocarbon odor.
GP6W-20'		4.0	201	13		
		2.0		14		OLIVE (2.5 Y 5/3) SILTY SAND (SM) with clay, fine - grained sand, stiff, dense, moist, strong hydrocarbon odor. (0, 50, 40, 10)
			158	15		
				16		OLIVE (2.5 Y 5/3) SANDY CLAY (CL) with silt, fine - grained sand, stiff, moist, medium high plasticity. (0, 15, 10, 75)
		3.0		17		
				18		Grades to DARK YELLOW BROWN (10 YR 4/4) SILTY CLAY (CL) stiff, moist, high plasticity. (0, 0, 20, 80)
		2.0	50	19		DARK YELLOW BROWN (10 YR 4/4) SILTY SAND (SM) fine - grained sand, loose, wet. (0, 80, 20, 0)
				20		
				21		Grades to (SP) (0, 100, 0, 0)
		2.0	32	22		DARK YELLOW BROWN (10 YR 4/4) SILTY CLAY (CL) stiff, wet, high plasticity. (0, 0, 20, 80)
				23		
				24		
				25		
				26		
				27		
				28		
				29		
				30		

Boring Abandonment Details: Filled with grout to surface

Boring terminated at 22 ft. bgs

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

SECOR

Reviewed By: James G Ritchie Date: 8-21-01

Revised By: _____ Date: _____

S:\TOSCO\05426, GP-4\1of1

Project:	TOSCO #05426		Log of Boring/Monitoring Well: GP-8
Boring Location:	8510 Gravenstein, Cotati, CA	Project No: 006.03896	Page 1 of 1
Subcontractor and Equipment:	Precision / SD-1	Logged By: FM / Drawn By: PM	
Sampling Method:	Direct Push	Monitoring Device: 580B OVM	Comments: Groundwater: GP8W-20' sampled at 08:33
Start Date/Time:	7/13/01 07:45	Finish Date/Time: 7/13/01 08:59	
First Water (bgs):	21.1 ft. bgs	Stabilized Water Level (bgs): 12.90 ft. bgs (after 15 min.)	

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft^2	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
HAND AUGERED TO 5'				0		LANDSCAPE SOIL
				1		DARK OLIVE BROWN (2.5 Y 3/3) GRAVELLY SILTY SAND (SM), fine subangular gravel, fine - grained sand, medium dense, moist. (25, 45, 30, 0)
			36	4		
				5		Grades to DARK GRAY (5 Y 4/1) SILTY SAND (SM), fine grained sand, soft, wet, strong hydrocarbon odor. (0, 60, 40, 0)
		0.0	450	6		
		4.0		7		DARK GREY (5 Y 4/1) SILTY CLAY (CL), very dense, moist, high plasticity, brown mottling, strong hydrocarbon odor. (0, 0, 20, 80)
		4.0	398	9		DARK GRAY (5 Y 4/1) SILTY SAND (SM), fine - grained sand, medium dense, moist, strong hydrocarbon odor, brown mottling. (0, 60, 40, 0)
		2.0		11		DARK GRAY (5 Y 4/1) SILTY CLAY (CL), with fine - grained sand, medium dense, moist, strong hydrocarbon odor, brown mottling. (0, 15, 20, 65)
			541	12		DARK GRAY (5 Y 4/1) GRAVELLY SAND (SW), trace silt, fine subrounded gravel, fine - to medium - grained sand, medium dense, moist, strong hydrocarbon odor. (25, 70, 5, 0)
GP8W-20'		2.0		13		
			398	15		DARK GRAY (5 Y 4/1) SILTY CLAY (CL), with fine - grained sand, stiff, wet, strong hydrocarbon odor, brown mottling. (0, 15, 20, 65)
		2.0		17		
			282	19		Grades OLIVE BROWN (2.5 Y 4/4)
		2.0		20		DARK BROWN (10 YR 3/3) SAND (SP), fine - to medium - grained sand, medium dense, wet, strong hydrocarbon odor. (0, 100, 0, 0)
		2.0	29	21		DARK BROWN (10 YR 3/3) SILTY CLAY (CL), with fine - grained sand, stiff, wet, moderate plasticity. (0, 10, 20, 70)
				22		Boring terminated at 22 ft. bgs

Boring Abandonment Details: Filled with grout to surface

REGISTERED GEOLOGIST · JAMES G. RITCHIE · No. 4974 expires 5-31-02 · STATE OF CALIFORNIA

SECOR

Reviewed By: [signature] Date: 8-21-01

Revised By: _____ Date: _____

S:\TOSCO\#426, GP-8\1\1

Project: TOSCO #05426			Log of Boring/Monitoring Well: **GP-9**
Boring Location: 8510 Gravenstein, Cotati, CA	Project No: 006.03896		Page 1 of 2
Subcontractor and Equipment: Precision / SD-1	Logged By: FM	Drawn By: PM	
Sampling Method: Direct Push	Monitoring Device: 580B OVM		Comments: Groundwater: GP9W-20' sampled at 09:11; GP9W-34' sampled at 10:02
Start Date/Time: 7/12/01 08:00	Finish Date/Time: 7/12/01 10:45		
First Water (bgs): 19.0 ft. bgs ▽	Stabilized Water Level (bgs): 12.60 ft. bgs (after 15 min.) ▼		

Surface Elevation: Casing Top Elevation:

LITHOLOGIC DESCRIPTION
(color, grain size, consistency, moisture, other)

Notes	Recovery	Penetrometer - Ton/ft²	PID (ppm)	Depth (feet)	USCS Symbol	Lithologic Description
				0		CONCRETE
				1		OLIVE BROWN (2.5 YR 4/3) GRAVELLY SILTY SAND (SM), fine subangular gravel, fine - grained sand, dense, damp, 2" diameter gravels at base. (25, 45, 30, 0)
		2.0	1.7	5–6		
				7		- Grades with coarse gravel.
		1.3	1.5	7		DARK GRAY (2.5 YN 4/0) CLAY (CL), trace silt, medium stiff, high plasticity, moist, with roots. (0, 0, 5, 95)
		3.0	1.0	10		
				11		LIGHT OLIVE BROWN (2.5 Y 5/3) SILTY CLAYEY SAND (SM/SC), fine - grained sand, very dense, moist, with roots. (0, 55, 25, 20)
GP8W-20'				12		DARK OLIVE BROWN (2.5 Y 3/3) SAND (SP), with silt, fine - to coarse - grained sand, very dense. (0, 90, 10, 0)
GP9W-20'		3.0	0.9	13		
GP9W-34'				14		OLIVE BROWN (2.5 Y 4/4) SILTY CLAY (CL), very stiff, moist, brown mottling. (0, 0, 15, 85)
		3.0	0.9	16		- Grades with sand.
				18		- Grades with roots.
▽		0	0.7	19		OLIVE BROWN (2.5 Y 4/4) SAND (SP), with silt, fine - to coarse - grained sand, loose, wet. (0, 90, 10, 0)
			0.4	20		
		1.5 to 3.0		21		OLIVE BROWN (2.5 Y 4/4) CLAY (CL), with silt, grades stiff to very stiff, high plasticity, moist, brown to gray mottling, roots. (0, 0, 10, 90)
				22		DARK OLIVE BROWN (2.5 Y 3/3) SAND (SP), fine - to coarse - grained sand, loose, wet. (0, 100, 0, 0)
		0	0.4	24		
				25		DARK GRAYISH BROWN (2.5 Y 4/2) CLAY (CL), with silt, stiff, wet, high plasticity, brown mottling. (0, 0, 10, 90)
		1.75	0.1	27		
				29		- Grades with increasing sand.
				30		

Boring Abandonment Details

Filled with grout to surface

REGISTERED GEOLOGIST JAMES G. RITCHIE No. 4974 expires 5-31-02 STATE OF CALIFORNIA

SECOR

Reviewed By: [signature] Date: [date]-01

Revised By: Date:

S:\TOSCO\05426, GP-9/1/12

Project:	TOSCO #05426		Log of Boring/Monitoring Well: GP-9
Boring Location:	8510 Gravenstein, Cotati, CA	Project No: 006.03896	Page 2 of 2
Subcontractor and Equipment:	Precision / SD-1	Logged By: FM / Drawn By: PM	
Sampling Method:	Direct Push	Monitoring Device: 580B OVM	Comments: Groundwater: GP9W-20' sampled at 09:11 GP9W-34' sampled at 10:02
Start Date/Time:	7/12/01 08:00	Finish Date/Time: 7/12/01 10:45	
First Water (bgs):	19.0 ft. bgs	Stabilized Water Level (bgs): 12.60 ft. bgs (after 15 min.)	

Surface Elevation: Casing Top Elevation:

Notes	Recovery	Penetrometer - Ton/ft2	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
2nd WATER		1.5	0.3	30		OLIVE BROWN (2.5 Y 4/3) SANDY SILTY CLAY (CL), fine - grained sand, medium stiff, wet, brown mottling. (0, 35, 30, 35)
			0.4	31		
				32		OLIVE BROWN (2.5 Y 4/3) SAND/GRAVELLY SAND (SP/SW) , stringers 4" thick, fine rounded gravel, fine to coarse - grained sand, trace silt and clay. (0, 100, 0, 0) and (25, 65, 5, 5)
				33		OLIVE BROWN (2.5 Y 4/3) SANDY SILTY CLAY (SC), fine - grained sand, medium stiff, wet, brown mottling. (0, 35, 30, 35)
				34		
		0		35		OLIVE BROWN (2.5 Y 4/3) GRAVELLY SAND (SW) , stringers 4" thick, fine rounded gravel, fine to coarse - grained sand, trace silt and clay. (25, 65, 5, 5)
				36		
			0.5	37		OLIVE BROWN (2.5 Y 4/3) SANDY SILTY CLAY (SC/CL), fine - grained sand, medium stiff, wet, brown mottling. (0, 35, 30, 35)
			0.5	38		OLIVE BROWN (2.5 Y 4/3) GRAVELLY SAND (SW) , stringers 4" thick, fine rounded gravel, fine to coarse - grained sand, trace silt and clay. (25, 65, 5, 5)
				39		
				40		DARK GRAYISH BROWN (2.5 Y 4/2) GRAVELLY CLAY (CL), fine to coarse rounded gravel, with fine - grained sand, very dense, wet. (20, 10, 10, 60)
		1.7		41		
				42		OLIVE GRAY (5 Y 5/1) GRAVELLY SANDY CLAY (CL), fine gravel, fine - to coarse - grained sand, very dense, stiff, wet. (25, 25, 15, 35)
			0.7	43		
				44		OLIVE BROWN (2.5 Y 4/3) SANDY CLAY (SC/CL), fine - grained sand, medium stiff, wet, brown mottling, with stringers. (0, 35, 30, 35)
			0.4	45		OLIVE GRAY (5 Y 5/1) GRAVELLY SANDY CLAY (CL), fine gravel, fine - to coarse - grained sand, very dense, stiff, wet. (25, 25, 15, 35)
				46		Boring terminated at 46 ft. bgs
				47		
				48		
				49		
				50		
				51		
				52		
				53		
				54		
				55		
				56		
				57		
				58		
				59		
				60		

Boring Abandonment Details: Filled with grout to surface

REGISTERED GEOLOGIST • JAMES G. RITCHIE • No. 4974 expires 5-31-02 • STATE OF CALIFORNIA

SECOR

Reviewed By: James G. Ritchie Date: 8-21-01

Revised By: Date:

SECOR
International Incorporated

Logged By:	Date Drilled:	Drilling Contractor	Project Name:	Method/Equipment:	Well Number:
FM	5/17/02	Gregg Drilling	Tosco #05426 8510 Gravenstein Highway,Cotati	Hollow Stem Auger CME 75	MW-10

See "Soil Classification Chart" for USCS Soil Classifications	Boring Diam (in.):	Surface Elev.(ft.):	Groundwater Depth (ft.):	Total Depth (ft.):	Drive wt.(lbs.):	Drop Dist.(in.):
	10	NA	▽ 15 First Water	30.0	140	30

Well Construction	Depth (ft.)	Sample Recovery	Blows/6"	Lithologic Description	PID (ppm)	Penetrometer (tons/sq ft)
Christy Box Well Vault Grout 4" Sch. 40 PVC Blank Bentonite Seal #3 Monterey Sand 4" Sch. 40 0.020" Circumslot PVC Screen End Cap	5 10 15 20 25 30 35		15 35 36 35 34 52	Black organic topsoil Hand auger to 5 feet below ground surface (bgs) DARK BROWN (10YR 3/3) GRAVELLY SILTY SAND (SM) fine subrounded gravel, fine-grained sand, medium dense, moist (25, 45, 30, 0) Grades YELLOWISH BROWN (10YR 5/4) with decreasing gravel, with reddish brown mottling (5, 80, 15, 0) DARK GRAY (10YR 4/1) CLAYEY SILT (CL) with fine-grained sand, stiff, high plasticity, damp, roots, odor (0, 10, 70, 20) BROWN (10YR 4/3) SANDY SILT (ML) with clay, fine-grained sand, stiff, medium plasticity, wet, gray root channels, odor (0, 20, 70, 10) DARK GRAYISH BROWN (10YR 4/2) SANDY SILT (ML) fine-grained sand, stiff, medium plasticity, moist (0, 15, 85, 0) DARK GREENISH GRAY (GLEY 4/1) SANDY SILT (ML) trace fine rounded gravel, hard, low plasticity, wet (5, 25, 70, 0) Bottom of boring @ 30' bgs Note: Percentages of Soil Types are estimated in the field in general conformity to ASTM 2488: Standard Practice for Description and Identification of Soils (The Visual-Manual Method) and approximate values are enetered onto the boring log.	24 41 93 14 24 23	3.0 1.5 2.7

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

REGISTERED GEOLOGIST
JAMES GRANT
Exp. 6/30/04
NO. 6102
STATE OF CALIFORNIA

Project No 06TO.04145.00 Date 5/17/02

Log of Well: MW-10

MW-10.GPJ
LOG OF BOREHOLE

Approved by

Figure (sheet 1 of 1)

APPENDIX B
FOURTH QUARTER QUARTERLY GROUNDWATER MONITORING REPORT (TRC)

Corrective Action Plan
76 Station No. 2705426
8510 Gravenstein Highway
Cotati, California
SECOR Project No.: 77CP.65426.01.0002

SEE TRC

4Q04 QMR

APPENDIX C
SENSITIVE RECEPTOR SURVEY REPORTS

Corrective Action Plan
76 Station No. 2705426
8510 Gravenstein Highway
Cotati, California
SECOR Project No.: 77CP.65426.01.0002

Results of Sensitive Environmental Receptor Survey
ISTI, 1997

INNOVATIVE TECHNICAL SOLUTIONS, Inc.

ITSI

January 6, 1997

Mr. Tim Johnson
Regional Environmental Manager
Tosco Corporation
601 Union Street, Suite 2500
Seattle, Washington 98101

Results of Sensitive Environmental Receptor Survey
BP Service Station
8510 Gravenstein Highway
Cotati, California

Dear Mr. Johnson:

Per our recent conversation, Innovative Technical Solutions, Inc. (ITSI) performed a Sensitive Environmental Receptor Survey (Survey) for the BP Service Station located in Cotati, California. The Survey was performed to identify receptors that are or may be adversely affected by a release. For purposes of this Survey, receptors are defined as persons, structures, utilities, surface waters, and water supply wells[1].

A Survey to a distance of 500 feet from the release was requested in an October 24, 1996 letter from Mr. Marty Isom of Sonoma County Department of Health Services, Environmental Health Division (SCDHS-EHD). The survey distance was extended to 750 feet from the release in a December 19, 1996 letter from Mr. Isom.

Persons

The general public should not come in contact or be at risk with hydrocarbon impacted soil and groundwater at the site because the former underground storage tanks (USTs) excavations have been backfilled and resurfaced to grade with concrete (ITSI, Pre-Acquisition Site Assessment, February 1996). Potential contact with groundwater at the site is limited to the access provided by four secured 2-inch diameter groundwater monitoring wells and one 2-foot diameter observation well. The monitoring and observation wells are used to perform groundwater monitoring and sampling and are accessed only by properly trained personnel during scheduled monitoring and sampling events.

Structures

A site visit was performed on December 26, 1996, to document the occupied structures within a 750 foot radius of the site. Figure 1 shows a street map of the site and vicinity provided by City of Cotati Building and Planning Department was used to delineate the 750 foot radius from the release.

[1] American Society for Testing and Material (ASTM), Volume 11.04, Designation E 1739-95, Section 3.1.29, 1996.

2855 Mitchell Drive, Suite 118, Walnut Creek, CA 94598 (510) 256-8898 (510) 256-8998 fax

Structures located within the 750 foot radius were a mixture of commercial business and residential homes, and include the following:

- The Apple Valley Plaza is located across Redwood Drive west of the site. The Apple Valley Plaza contained the following active businesses:
  - Johnny's Java
  - Aquariums & Reptiles
  - Valley Tans
  - Pool Tables & Supplies
  - Slot Cars
  - Gouveia's Gallery
  - Cuts & Tans
  - Beauty Supply
  - Buffalo Billiards
  - D&D's Deli & Liquor
- An abandoned house is located adjacent and west of the Apple Valley Plaza on Gravenstein Highway 116 frontage. The property is zoned CH (commercial) and is for sale. Contact with the current reality office indicated the abandoned house will be demolished.
- An Arco Service Station is located north of the site across Gravenstein Highway. The Arco Service Station has had a documented petroleum hydrocarbon release. During 1985, petroleum hydrocarbon impacted soil was detected during the removal of three underground storage tanks (USTs). Ten groundwater monitoring wells and numerous soil borings have been constructed and installed at the site. Soil vapor extraction and groundwater pumping tests have proven unsuccessful in remediating the site, generally because of the soil type beneath the Arco service station (Harding Lawson Associates, Additional Site Characterization and Remedial Alternative Evaluation, May 3, 1996).
- A large building containing several business is located north behind the Arco service station. The businesses in the building include the following:
  - Sonoma County Family YMCA
  - Studio FX
  - Fairfax French Cleaners
  - Sonoma Mattress Co.
  - Montana Hawk Inc. Indoor Shooting Range
  - S.F. Rykoff & Co.
  - Cori, Inc.
  - Gravenstein Travel
  - Paragon Screen Printing, Inc.
  - Spa's
- Green Oaks Restaurant is located west from Arco service station and across Redwood Drive. West and north behind the Green Oaks Restaurant are open and undeveloped fields.
- The intersection of US 101 and Gravenstein Highway 116 is located east of the site.

There are no hospitals within Cotati city limits. The closest school to the site is Thomas Page Elementary School located at 1075 Madrone Avenue, approximately 0.5 mile west of the site. There are no registered day care centers or convalescent homes within 750 feet of the release, according to the City of Cotati Building and Planning Department.

Utilities

The City of Cotati Building and Planning Department provided available utility maps of the site vicinity, including maps of the sanitary sewer lines, water lines, and storm drain system.

Figure 2 shows the water line map for the site vicinity. According to this map, a ten-inch diameter water line is located along the south side of Gravenstein Highway adjacent to the site. This water line runs east and west along Gravenstein Highway. Another ten-inch diameter water line is

located west of the site along Redwood Drive and runs north and south, crossing through the intersection of Redwood Drive and Gravenstein Highway.

Mr. Paul Schock, City of Cotati Engineer, indicated the top of the water lines are located approximately 4 feet below surface grade. The water lines are covered with gravel and the trenches backfilled to 95% compaction with material chosen by the individual contractors.

Figure 3 shows the sanitary sewer line map for the site vicinity. According to this map, a six-inch sanitary sewer line is located adjacent and west of the site on Redwood Drive and flows south to north. This line connects to an eight-inch sanitary sewer line running east to west along the north side of Gravenstein Highway. A larger ten-inch sanitary sewer line continues north along Redwood Drive. Mr. Schock indicated the sanitary sewer line is located at an approximate elevation of 95.28 in the southern portion of Redwood Drive. The north flowing sanitary sewer line is approximately 6 to 7 feet below surface grade.

Figure 4 shows the storm drain line map for the site vicinity. According to this map, a 24-inch storm drain runs east to west along the south side of Gravenstein Highway north of the site. a series of catch basins and smaller storm drain lines are present in the parking lot for Apple Valley Plaza west across Redwood Drive and feed into the 24-inch storm drain line along Gravenstein Highway. An 18-inch storm drain is located southeast of the site, connecting an area between the onramp and US 101 to a low point southeast of the site and west of US 101. A 36-inch storm drain connects this low point with a similar area north across Gravenstein Highway.

Surface Waters

During a site visit on December 18, 1996, the presence of seasonal standing surface water southeast of the site and west of US 101 was documented. Mr. Marty Isom of SCDHS-EHD observed the presence of the surface water. The surface water is upgradient and offsite of the former UST pit (ITSI, Results of Soil and Groundwater Investigation, February 21, 1996).

On December 26, 1996, a north to south trending culvert passing beneath Gravenstein Highway adjacent and west of the site and Apple Valley Plaza contained flowing water. The culvert was not located on the north side of Gravenstein Highway.

Surface water possibly from winter storms have collected in the empty fields north of Gravenstein Highway behind the Green Oaks Restaurant located northwest of the site.

Water Supply Wells

The California Department of Water Resources (DWR) District Office in Santa Rosa was contacted regarding water wells in the Cotati area. DWR indicated the appropriate source for records of water wells in the Cotati area was Sonoma County. According to Mr. Richard Lease of the Sonoma County Permit and Resource Management Department, there are no permitted water wells in or around the site vicinity. However, Mr. Lease indicated there may be a private water supply well on the property west of the Apple Valley Plaza. Water supply wells constructed before 1973 were not required to be permitted.

During an investigation performed on December 26, 1996, ITSI personnel were able to located the water supply well approximately 700 feet west of the site. The water well is an eight inch diameter PVC pipe extruding approximately 6 inches above the ground surface. The well was found with the top secured and was not in service.

A 235-feet deep eight-inch diameter steel casing water supply well located west and adjacent to the Arco service station was abandoned on September 15–16, 1992, by Harding Lawson Associates. Other information regarding the age or construction details are not available (Harding Lawson Associates, Additional Site Characterization and Remedial Alternative Evaluation, May 3, 1996).

The City of Cotati Building and Planning Department provided a list of addresses that are not on city provided water and therefore possibly may have private water supply wells. The addresses on the list are not located within 750 feet of the release.

Sincerely,

Timothy A. Watchers, R.G.
Project Geologist

Jeffrey D. Hess, R.G.
Project Director

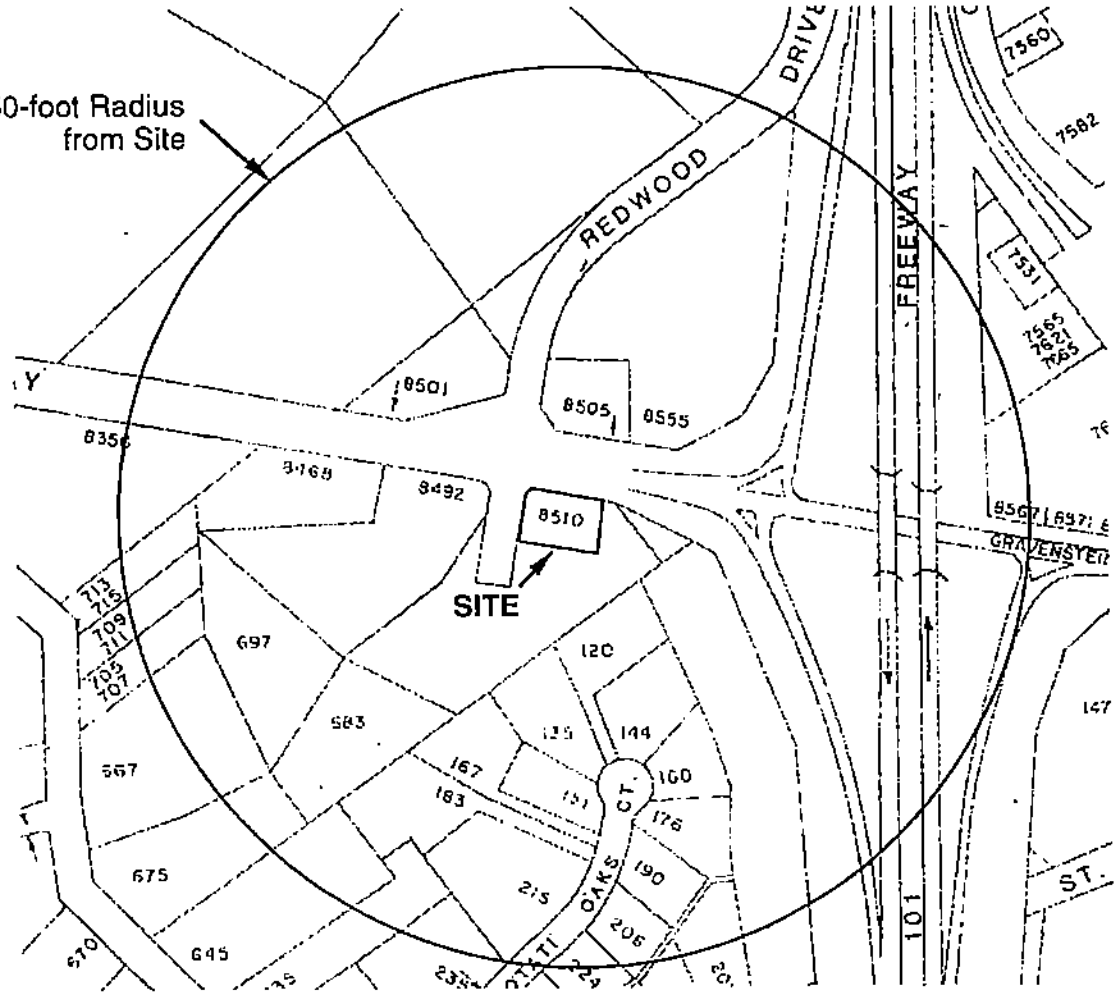


FIGURE 1

SITE VICINITY

BP Service Station
8510 Gravenstein Highway
Cotati, California

TOSCO CORPORATION

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Source: House Numbering Map, City of Cotati, June 1996

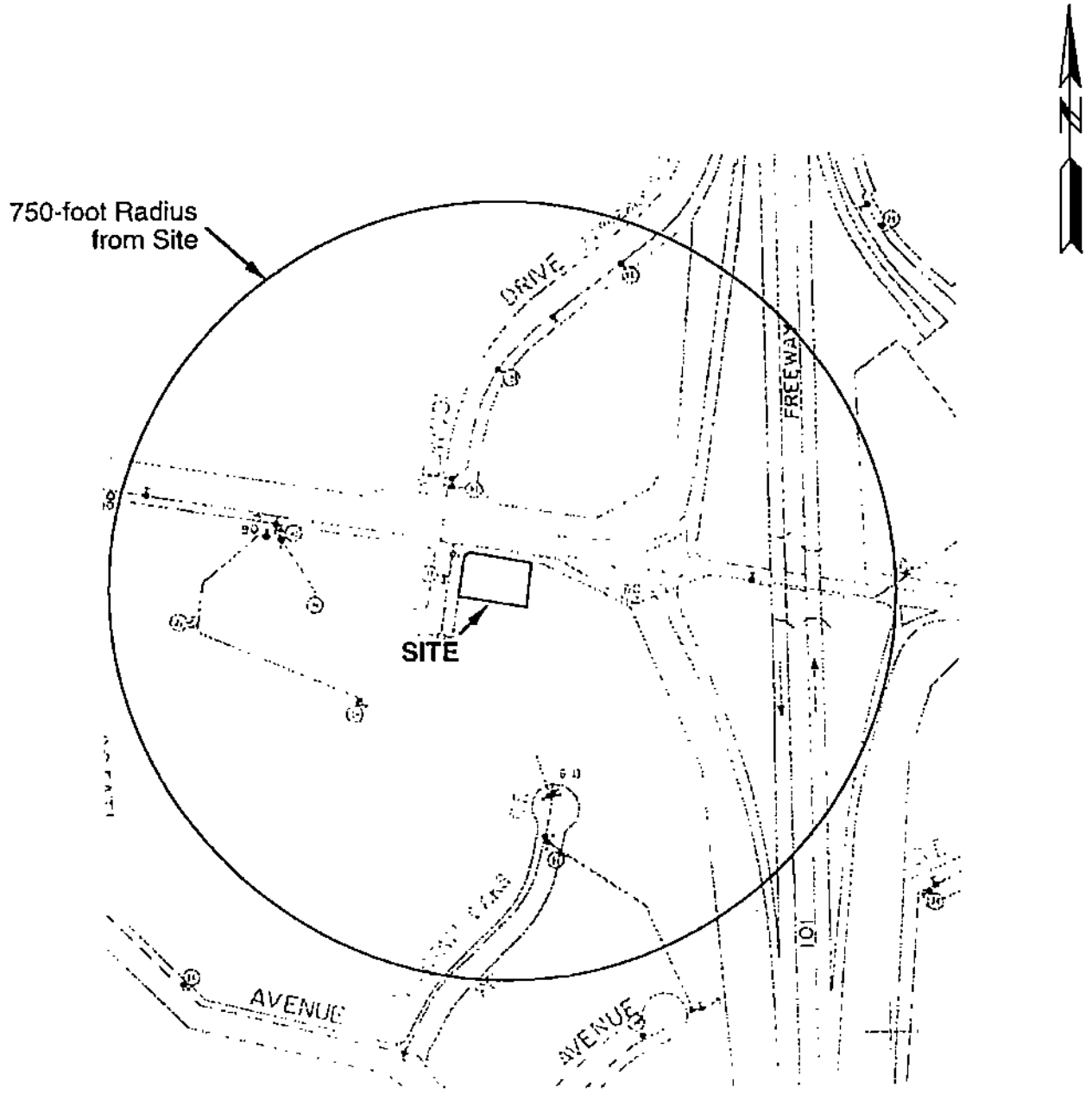


FIGURE 2

MAP OF WATER LINES

BP Service Station
8510 Gravenstein Highway
Cotati, California

TOSCO CORPORATION

ITSI

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Source: Water Line Map, City of Cotati, June 1993

96-127/F-3-Sewer

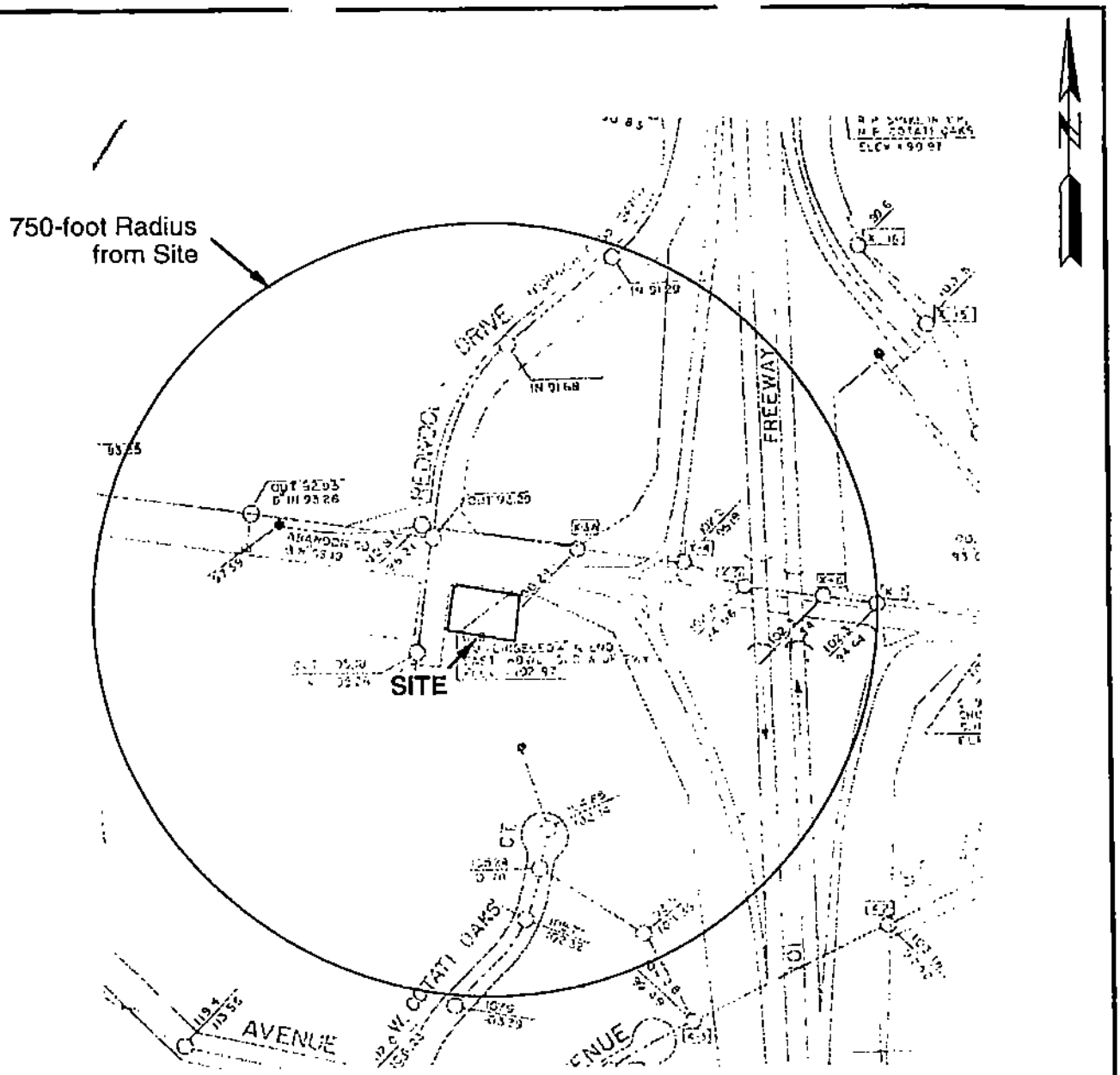


FIGURE 3

MAP OF SANITARY SEWER LINES

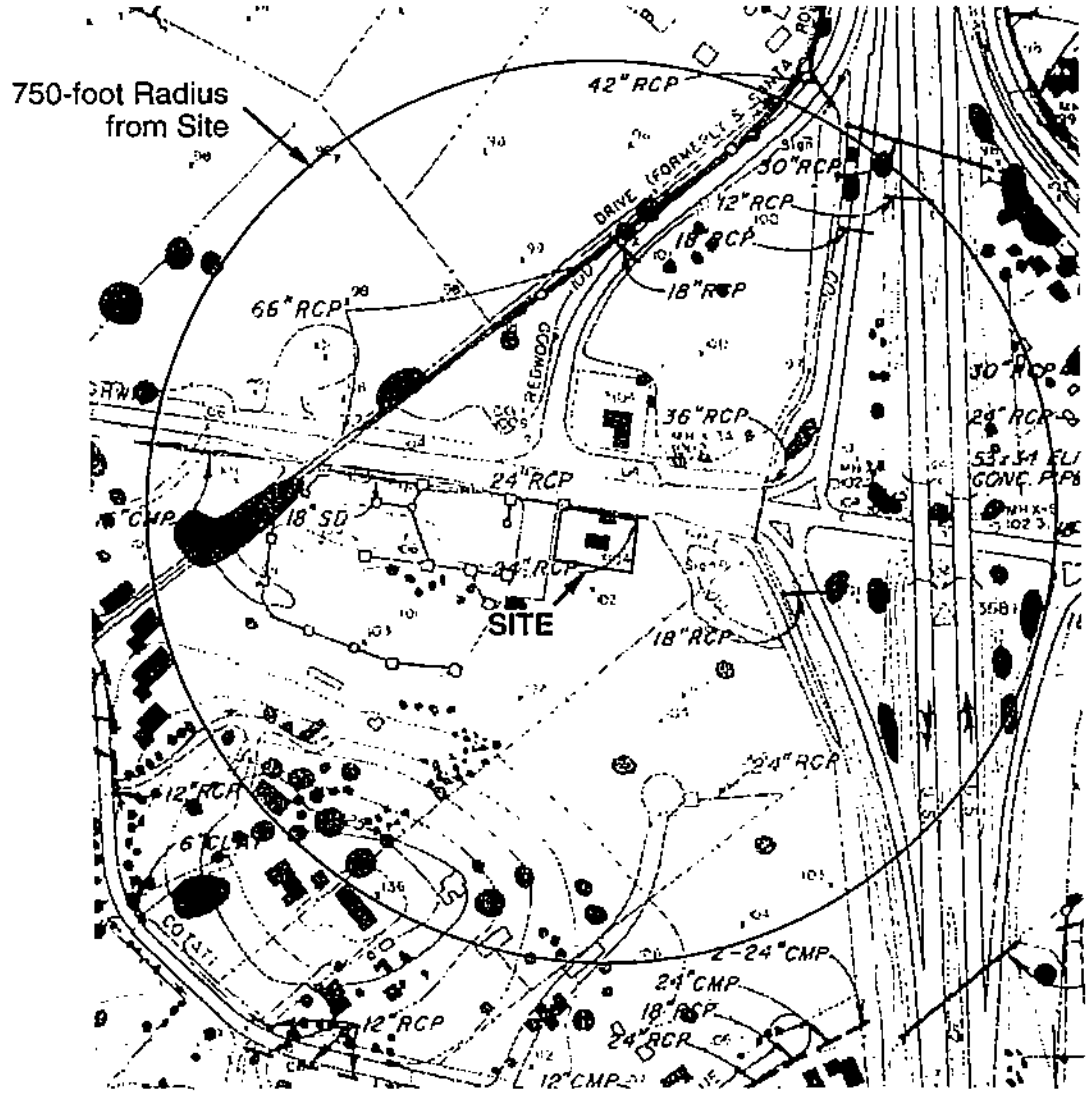
BP Service Station
8510 Gravenstein Highway
Cotati, California

TOSCO CORPORATION

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Source:
Sanitary Sewer Line Map, City of Cotati, June 1992

96-127/F 4-Storm



0 300 Feet 600 Feet

Approximate Scale

Source: House Numbering Map, City of Cotati, June 1993

FIGURE 4

MAP OF STORM DRAIN SYSTEM

BP Service Station
8510 Gravenstein Highway
Cotati, California

TOSCO CORPORATION

INNOVATIVE TECHNICAL SOLUTIONS, INC.

Results of Sensitive Environmental Receptor Survey
SECOR, 2000

SECOR
International Incorporated

October 23, 2000

Mr. Jonathan Tracy
Sonoma County Department of Health Services
Environmental Health Division
1030 Center Drive, Suite A
Santa Rosa, California 95403

Re: Well Survey Results
Tosco (Former Circle K) Station #05426
8510 Gravenstein Highway
Cotati, California

Dear Mr.Tracy:

SECOR International Incorporated (SECOR) has prepared this letter on behalf of Tosco Marketing Company (Tosco) to present the results of a well survey performed in the vicinity of Tosco (former Circle K) Unit No. 05426, located at 8510 Gravenstein Highway (the Site). The well survey was conducted within a 1,900-foot radius of the Site as requested by the Sonoma County Department of Health Services, Environmental Health Division (SCDHS) in a letter dated July 25, 2000.

The well survey was conducted in accordance with the method recommended by the SCDHS, and included a review of Department of Water Resources (DWR) files. SECOR's review of the DWR files found that there are thirteen wells reported to be located within the survey area. Table 1 presents a summary of well information including well status, well type, and associated address for each well location. Figure 1 shows the locations of the wells within the survey area with respect to the Site. Copies of DWR files for wells located within 1,900 feet of the Site are included as Attachment A.

The following information regarding the thirteen wells in the area of the Site was obtained from the well survey.

- One well was reported to be located at 645 W. Cotati Avenue, approximately 1,000 feet west-southwest and upgradient of the Site. This well was installed in 1966 to a total depth of 165 feet below ground surface (bgs) with an unknown depth to the sanitary seal, and was reportedly used for domestic purposes.

- One well was reported to be located on W. Cotati Avenue, approximately 1,100 feet south-southwest and upgradient of the Site. This well was installed in 1969 to a total depth of 266 feet bgs with an unknown depth to the sanitary seal, and was reportedly used for domestic purposes.

- One well was reported to be located on School Road, approximately 1,900 feet southwest and upgradient of the Site. This well was installed in 1948 to a total depth of 75 feet bgs with an unknown depth to the sanitary seal. There was no reported usage.

27054 SS X BP
X QM TRANSMITTAL
3 4 5

1225 Pear Avenue, Suite 110, Mountain View, CA 94043 650.691.0131 650.691.9817 Fax www.secor.com

- One well was reported to be located at 150 St. Joseph Way, approximately 1,050 feet east and crossgradient of the Site. This well was installed in 1978 to a total depth of 388 feet bgs with a sanitary seal at 50 bgs, and was reportedly used for irrigation purposes.

- One well was reported to be located at 7971 Old Redwood Highway, approximately 1,050 feet east-southeast and crossgradient of the Site. This well was installed in 1963 to a total depth of 309 feet bgs with a sanitary seal at 50 feet bgs, and was reportedly used for domestic purposes.

- One well was reported to be located 1.54 miles south of Wilfred Avenue and 240 feet east of U.S. Highway 101, approximately 1,500 feet north-northeast and downgradient of the Site. This well was installed in 1951 to a total depth of 4,035 feet bgs with an unknown depth to the sanitary seal, and was reportedly used for oil exploration purposes.

- One well was reported to be located at 187 Helman Lane, approximately 1,200 feet north and downgradient of the Site. This well was installed in 1980 to a depth of 223 feet bgs with a sanitary seal at 20 feet bgs, and was reportedly used for domestic purposes.

- One well was reported to be located at 200 Helman Lane, approximately 1,200 feet north-northwest and downgradient of the Site. This well was installed in 1979 to a depth of 170 feet bgs with a sanitary seal at 23 feet bgs, and was reportedly used for domestic purposes.

- One well was reported to be located at 170 Helman Lane, approximately 1,400 feet north-northwest and cross- to downgradient of the Site. This well was installed in 1978 to a depth of 89 feet bgs with a sanitary seal at 20 feet bgs, and was reportedly used for domestic purposes.

- One well was reported to be located at 280 Helman Lane, approximately 1,500 feet north-northwest and cross- to downgradient of the Site. This well was installed in 1974 to a depth of 213 feet bgs with a sanitary seal at 20 feet bgs, and was reportedly used for domestic purposes.

- One well was reported to be located at Helman Lane, approximately 1,700 feet north-northwest and cross- to downgradient of the Site. This well was installed in 1971 to a depth of 70 feet bgs with an unknown depth to the sanitary seal, and was reportedly used for domestic purposes.

- One well was reported to be located at 363 Helman Lane, approximately 1,900 feet northwest and cross- to downgradient of the Site. This well was installed in 1910 to a depth of 52 feet bgs with an unknown depth to the sanitary seal, and was reportedly used for domestic purposes.

- One well was reported to be located at 8239 Gravenstein Highway, approximately 1,500 feet west-northwest and cross- to downgradient of the Site. This well was installed in 1979 to a depth of 221 feet bgs with a sanitary seal at 20 feet bgs, and was reportedly used for domestic purposes.

If you have any questions or would like additional information, please do not hesitate to call us at (650) 691-0131.

Sincerely,

SECOR International Incorporated

Robert Potter
Project Manager

James G. Ritchie, R.G.
Principal Geologist

Attachments: Table 1 – Area Well Survey Data
Figure 1 – Well Survey Results Map
Attachment A – DWR Well Completion Reports

cc: Mr. Dave DeWitt, Tosco Marketing Company

Table 1- Area Well Survey (1,900 Foot Radius) – Tosco (Former Circle K) SS #05426, 8510 Gravenstein Highway, Cotati, CA

Well ID	Well Owner	Address of Well Owner	Address of Well Location	Total Well Depth (ft)	Depth of Sanitary Seal	Date Well Installed	Well Use
1	Adolph Basaldella	645 W. Cotati Avenue, Cotati, CA	645 W. Cotati Avenue, Cotati, CA	165	unknown	7/28/66	Domestic
2	K. Anderson	P.O. Box 13, Cotati, CA	W. Cotati Avenue, Cotati, CA	266	unknown	7/30/69	Domestic
3	M. Mulligan	Unknown	School Road, Cotati, CA	75	unknown	1948	unknown
4	St. Joseph's Church	150 St. Joseph Way, Cotati, CA	150 St. Joseph Way, Cotati, CA	388	50	9/12/78	irrigatio;
5	Fred Andreoli	P.O. Box 146, Cotati, CA	7971 Old Redwood Highway, Cotati, Ca	309	50	9/16/83	Domestic
6	Stephens and Rohnert	unknown	1.54 miles S. Wilfred Avenue 240 feet E. U.S. Highway 101	4,.035	unknown	1951	Oil Test
7	Fred Andeoli	8600 Gravensein Highway S., Cotati, CA	187 Helman Lane, Cotati, CA	223	20	10/15/80	Domestic
8	Gerald Narron	200 Helman Lane, Cotati, CA	200 Helman Lane, Cotati, CA	170	23	9/12/79	Domestic
9	Charles Badger	170 Helman Lane, Cotati, CA	170 Helman Lane, Cotati, CA	89	20	6/27/78	Domestic
10	Lorin Nibe	280 Helman Lane, Cotati, CA	280 Helman Lane, Cotati, CA	213	20	9/20/74	Domestic
11	DeWayne Strawther	7507 Boris Court, Rohnert Park, CA	Helman Lane, Cotati, CA	70	unknown	1/13/71	Domestic
12	L.C. Batkin	363 Helman Lane, Cotati, CA	363 Helman Lane, Cotati, CA	52	unknown	1910	Domestic
13	Richard Gardner	1583 Rose Avenue, Santa Rosa, CA	8239 Gravenstein Highway, CA	221	20	9/27/79	Domestic

0 540 1080

APPROXIMATE SCALE IN FEET

LEGEND

- 8 WELL LOCATION
- 3 WELL LOCATION (APPROXIMATE, EXACT ADDRESS UNKNOWN)

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP
COTATI, CALIFORNIA
(1954, PHOTOREVISED 1980)

SECOR
International Incorporated

DRAWN	GEL
APPR	RP
DATE	15 OCTOBER 00
JOB NO.	006.03418.111

FIGURE 1
TOSCO (FORMER CIRCLE K) #05426
8510 GRAVENSTEIN HIGHWAY
COTATI, CALIFORNIA

WELL SURVEY

R:\OAKLAND\ACAD\TOSCO\TOSCO-006.03418.111-001.DWG 10/13/00

ATTACHMENT A

DWR WELL COMPLETION REPORTS

28 1

ORIGINAL
File Original, Duplicate and Triplicate with the
REGIONAL WATER POLLUTION
CONTROL BOARD No. ______
(Insert appropriate number)

WATER WELL DRILLERS REPORT

(Sections 7076, 7077, 7078, Water Code)

THE RESOURCES AGENCY OF CALIFORNIA

Do Not Fill In
Nº 121003

State Well No. ______
5/10 Other Well No. 6/8-35 B9C

(1) OWNER:
Name: Mr. Adolf Basaldella
Address: 645 West Cotati Avenue
Cotati, California

(2) LOCATION OF WELL:
County: Sonoma Owner's number, if any—
R. F. D. or Street No.: Same as above - off Redwood Hwy. in Cotati.

(3) TYPE OF WORK (check):
New well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic [X] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(5) EQUIPMENT:
Rotary [X]
Cable [ ]
Dug Well [ ]

(6) CASING INSTALLED:
SINGLE [X] DOUBLE [ ]

From	ft. to	ft. Diam.	Gage or Wall
0	115	8 5/8"	.188
115	165	6"	.188

If gravel packed

Diameter of Bore	from ft.	to ft.

Type and size of shoe or well ring ______ Size of gravel: ______
Describe joint ______

(7) PERFORATIONS:
Type of perforator used: Torch
Size of perforations: 3 in., length, by 1/8 in.

From ft.	to ft.	Perf. per row	Rows per ft.
55	115	8 5/8	
125	165	6"	

(8) CONSTRUCTION:
Was a surface sanitary seal provided? [ ] Yes [ ] No To what depth ______ ft.
Were any strata sealed against pollution? [ ] Yes [ ] No If yes, note depth of strata
From ______ ft. to ______ ft.
Method of Sealing ______

(9) WATER LEVELS:
Depth at which water was first found: 145 ft.
Standing level before perforating: 60 ft.
Standing level after perforating: 44 ft.

(10) WELL TESTS:
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: 12 gal./min. with 80 ft. draw down after ______ hrs.
Temperature of water ______ Was a chemical analysis made? [ ] Yes [X] No
Was electric log made of well? [ ] Yes [X] No

(11) WELL LOG:
Total depth 165 ft. Depth of completed well 165 ft.
Formation: Describe by color, character, size of material, and structure.

From ft.	to ft.	Formation
0	20	Clay
20	64	Clay gravel .
64	73	Boulders and clay
73	85	Real sandy clay
85	115	Hard Clay
115	145	Sandy clay
145	150	Sand
150	165	Hard Clay

EL 110'

~~CONFIDENTIAL LOG~~
~~Water Code Sec. 7080~~

~~FOR OFFICIAL USE ONLY~~

Work started July 25, 1966 Completed July 28, 1966

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Les Petersen Well Drilling Co.
(Person, firm, or corporation) (Typed or printed)
Address 5434 Old Redwood Hwy.
Santa Rosa, California

[Signed] Les Petersen Well Drilling Co
Well Driller

License No. C57 106989 Dated August 8, 1966
SC-61

6N/8W-35 J

ORIGINAL
File with DWR

CONFIDENTIAL LOG
Water Code Sec. 7080

WATER WELL DRILLERS REPORT

(Sections 7076, 7077, 7078, 7079, 7080, Water Code)

THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Do Not Fill In

No 17335

State Well No. ____
Other Well No. ____

(1) OWNER:
Name MRS K. ANDERSON
Address P.O. BOX 13
COTATI, CALIF.

(2) LOCATION OF WELL:
County SONOMA Owner's number, if any
Township, Range, and Section WEST COTATI AVE
Distance from cities, roads, railroads, etc. COTATI, CALIF.

(3) TYPE OF WORK (check):
New Well ☑ Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary ☐
Cable ☑
Other ☐

(6) CASING INSTALLED:
STEEL: OTHER:
SINGLE ☐ DOUBLE ☐

If gravel packed

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	From ft.	To ft.
0	246	8"				

Size of shoe or well ring: 8" Size of gravel:
Describe joint

(7) PERFORATIONS OR SCREEN:
Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
246	266			3/16

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes ☑ No ☐ To what depth ft.
Were any strata sealed against pollution? Yes ☐ No ☐ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing Cement

(9) WATER LEVELS:
Depth at which water was first found, if known 240 ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing ft.

(10) WELL TESTS:
Was pump test made? Yes ☑ No ☐ If yes, by whom?
Yield: 20 gal./min. with 150 ft. drawdown after 50 hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☐
Was electric log made of well? Yes ☐ No ☐ If yes, attach copy

(11) WELL LOG:
Total depth 265 ft. Depth of completed well 265 ft.
Formation: Describe by color, character, size of material, and structure

ft. to ft.

1" - 40" - Yellow Sandy clay
40 - 50 - Yellow sand
50 - 70 - Yellow sand & Sandy Clay
70 - 80 Blue clay
80 - 90 - Yellow Sandy Clay
90 - 100 Blue sand
100 - 150 Blue sand
150 - 160 Blue clay
160 - 195 Yellow sand & Sandy Clay
195 - 225 Yellow Sand
225 - 230 Blue clay
230 - 240 Yellow sand
240 - 255 Blue Sand & sandstone
255 - 265 Yellow sand

CONFIDENTIAL LOG
Water Code Sec. 7080

Work started 7/22 1969. Completed 7/30 1969

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME LES PETERSEN WELL DRILLING & PUMP CO.
(Person, firm, or corporation) (Typed or printed)
Address 5434 Old Redwood Hwy
Santa Rosa, California 95401

[SIGNED] Ken Hansen
(Well Driller)

License No. 106989 Dated August 6, 1969

SKETCH LOCATION OF WELL ON REVERSE SIDE

DWR 188 (REV. 9-63)

9-068
(December 1948)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

49-2666

No. 6/8 - 35C1

Other Nos. 5-5X

WELL LOG

State Calif. County Sonoma Subarea Santa Rosa

Owner M. Mulligan

Location School Road, Cotati, California

Drilled by Hammond Bros. Address 3295 Guernsville Rd.

Date 1948 Casing diam. 8" Land-surf alt. 325 115

Source of data Driller

(Enter type of well, perforations, yield, and drawdown at end of log)

Correlation	Material	Thickness (feet)	Depth (feet)
	Topsoil	3	0-3
	Blue clay	18	3-21
	Gravel	2	21-23
	Blue clay	44	23-67
	Water gravel, large	8	67-75
	2,000 G.P.H.		

#3

Record by ..... Date .....

Sheet 1 of 1

U. S. GOVERNMENT PRINTING OFFICE 16—61587-1

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 061754

Notice of Intent No.
Permit No. or Date

State Well No.
Other Well No. 6N/8W-26

(1) OWNER: Name St. Joseph Church
Address ~~XXXXXXXXXXXXXXXX~~ 150 St. Joseph Way
City Cotati, California Zip

(2) LOCATION OF WELL (See instructions):
County Sonoma Owner's Well Number
Well address if different from above same
Township Range Section
Distance from cities, roads, railroads, fences, etc.

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well XX Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation XX
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☐
Other XX

(5) EQUIPMENT:
Rotary XX Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes XX No ☐ Size Boydseye
Diameter of bore
Packed from 0 to 50 ft.

(7) CASING INSTALLED:
Steel ☐XX Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	388	8	10

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
Sandscreen		
335	378	

(9) WELL SEAL:
Was surface sanitary seal provided? Yes XX No ☐ If yes, to depth 50 ft.
Were strata sealed against pollution? Yes ☐ No ☐ Interval ft.
Method of sealing readymix

(10) WATER LEVELS:
Depth of first water, if known ft.
Standing level after well completion 50 ft.

(11) WELL TESTS:
Was well test made? Yes XX No ☐ If yes, by whom?
Type of test Pump ☐ Bailer ☐ Air lift XX
Depth to water at start of test ft. At end of test 80+ 85
Discharge 50+ gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No ☐ If yes, by whom?
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 388 ft. Depth of completed well ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	-5	top soil
5	-40	sandy yellow clay
40	-70	blue clay
70	-80	yellow clay/streaks grvl.
80	-105	yellow clay/gravel
105	-130	yellow sand/gravel
130	-155	sandy blue clay
155	-160	gravel (tight)
160	-195	sandy blue clay
195	-280	sandy yellow clay
280	-310	sticky blue clay
310	-320	blue clay/gravel
320	-345	brown clay/streaks gravel
345	-365	blue sand and gravel
365	-380	blue sand and gravel
380	-388	blue clay

Work started 9/6/78 19 Completed 9/12/78 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Signed JOHN JEPSEN (Well Driller)
NAME LES PETERSEN DRILLING & PUMP, INC. (Person, firm, or corporation) (Typed or printed)
Address 5434 Old Redwood Highway
City Santa Rosa, California Zip 95401
License No. 261084 Date of this report 9/18/78

DWR 188 (REV. 7-74) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

No. 066834

Notice of Intent No. 176107

Permit No. or Date SEPT. 7, 1983

State Well No. _____

Other Well No. 06N08W26Q

(1) OWNER: Name FRED ANDREOLI

Address P.O. Box 146

City COTATI Zip _____

(2) LOCATION OF WELL (See instructions):

County SONOMA Owner's Well Number 7971

Well address if different from above OLD REDWOOD HWY

Township _____ Range _____ Section _____

Distance from cities, roads, railroads, fences, etc. COTATI

WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well [X] Deepening [ ]

Reconstruction [ ]

Reconditioning [ ]

Horizontal Well [ ]

Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic [X]

Irrigation [ ]

Industrial [ ]

Test Well [ ]

Stock [ ]

Municipal [ ]

Other [ ]

(5) EQUIPMENT:

Rotary [X] Reverse [ ]

Cable [ ] Air [ ]

Other [ ] Bucket [ ]

(6) GRAVEL PACK:

Yes [X] No [ ] Size PEA

Diameter of bore 10

Packed from 50 to 309 ft.

(7) CASING INSTALLED:

Steel [X] Plastic [ ] Concrete [ ]

(8) PERFORATIONS: TORCH

Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	309	6 5/8	156	105	125	3/16 x 6
				261	309	

(9) WELL SEAL:

Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 50 ft.

Were strata sealed against pollution? Yes [ ] No [ ] Interval _____ ft.

Method of sealing NEAT CEMENT

(10) WATER LEVELS:

Depth of first water, if known _____ ft.

Standing level after well completion 76 ft.

(11) WELL TESTS:

Was well test made? Yes [X] No [ ] If yes, by whom? DRILLER

Type of test Pump [ ] Bailer [X] Air lift [ ]

Depth to water at start of test _____ ft. At end of test 178 ft.

Discharge 20 gal/min after 5 hours Water temperature COOL

Chemical analysis made? Yes [ ] No [X] If yes, by whom? _____

Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 309 ft. Depth of completed well 309 ft.

from ft. to ft. Formation (Describe by color, character, size or material)

From ft.	To ft.	Formation
0	3	SOFT BROWN CLAY
3	6	BROWN CLAY W/GRAVEL
6	12	YELLOW CLAY
12	18	BLUE CLAY
18	24	BROWN CLAY
24	41	BROWN CLAY W/GRAVEL
41	53	LIGHT BROWN CLAY
53	61	BROWN GRAVEL
61	103	BROWN CLAY
103	109	BROWN CLAY W/STREAKS OF GRAVEL
109	163	BROWN CLAY
163	185	BLUE CLAY
[illegible]	271	BROWN CLAY
[illegible]	289	BROWN CLAY W/GRAVEL
289	294	BROWN CLAY
294	309	BROWN CLAY W/STREAKS OF GRAVEL

CONFIDENTIAL - NOT FOR PUBLIC RELEASE - WATER CODE SEC. 13752

Work started SEPT 8 1983 Completed SEPT 16 1983

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED [signature] (Well Driller)

NAME TRI-K DRILLING (Person, firm, or corporation) (Typed or printed)

Address P.O. BOX 3938

City SANTA ROSA Zip 95402

License No. 245571 Date of this report 9-26-83

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

49-2618

9-083
(December 1948)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

No. 6/8 - 26B1

Other Nos. 9/8

WELL LOG

State California County Sonoma Subarea Santa Rosa

Owner Stephens and Rohnert #1 oil test

Location 1.5± mile S. Wilfred Avenue

240' E. U. S. Highway 101

Drilled by Precision Drilling Co. & Others Address

Date Fall 1950-Spring 1951 Casing diam. Land-surf. alt. 95

Source of data Driller

(Enter type of well, perforations, yield, and drawdown at end of log)

Correlation	Material	Thickness (feet)	Depth (feet)
	?	0	2230
	Sonoma basalt (Cored)	2230	2265
	?	2265	?
	Gritty clay	?	3250
	?	?	4035
	(Feb. 15, 1951		4035

3 Record by Date

Sheet 1 of 1

U. S. Government Printing Office 16—61687-1

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in
No. 055822

Notice of Intent No. 175703
Permit No. or Date 550-80

State Well No.
Other Well No. 06N08W26L

(1) OWNER: Name Fred Androli
Address 8600 Gravenstein Hwy So
City Cotati, Ca. Zip 94928

(2) LOCATION OF WELL (See instructions): 046-281-08
County Sonoma Owner's Well Number
Well address if different from above 187 Helman Lane
Township Cotati Range Section
Distance from cities, roads, railroads, fences, etc.

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [X]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

(5) EQUIPMENT:
Rotary [X] Reverse [ ]
Cable [ ] Air [ ]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [X] No [ ] Size Pea
Diameter of bore 10
Packed from 20 ft. to 223 ft.

(7) CASING INSTALLED:
Steel [X] Plastic [ ] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	223	6&8	156

(8) PERFORATIONS: Torch
Type of perforation or size of screen

From ft.	To ft.	Slot size
95	115	3/16x6
195	203	"

Perf:3 Rows around, 11 Rows down (Stagger)

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 20 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval ft.
Method of sealing Neat Cement

(10) WATER LEVELS:
Depth of first water, if known ft.
Standing level after well completion 82 ft.

(11) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom?
Type of test Pump [ ] Bailer [X] Air lift [ ]
Depth to water at start of test ft. At end of test 82 ft.
Discharge 20 gal/min after 2 hours Water temperature Cool
Chemical analysis made? Yes [ ] No [X] If yes, by whom?
Was electric log made? Yes [X] No [ ] If yes, attach copy to this report

(12) WELL LOG: Total depth 223 ft. Depth of completed well 223 ft.

from ft.	to ft.	Formation (Describe by color, character, size of material)
0	1	Topsoil
1	3	Adobe
3	14	Brown clay w/coarse sand
14	63	Blue clay
63	69	Brown clay w/ gravel
69	92	Brown clay
92	97	Brown clay w/ gravel
97	103	Brown clay
103	106	Brown clay w/ gravel
106	172	Brown clay
172	181	Brown clay w/ strks of gravel
181	193	Brown clay
193	223	Brown clay w/ gravel

Work started 10/13 19 80 Completed 10/15 19 80

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

Signed Frank Kemp (Well Driller)
NAME Tri-K-Drilling (Person, firm, or corporation) (Typed or printed)
Address P.O. Box 3938
City Santa Rosa, Ca. Zip 95402
License No. 245571 Date of this report 10/20/80

DWR 188 (REV. 7-78) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL 046-286-02-7

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

795-3835 (APN)

Do not fill in

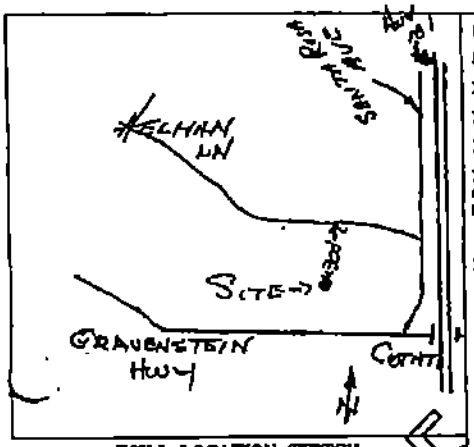
No. 066122

Notice of Intent No.
Permit No. or Date

State Well No.
Other Well No. 06N08W26L

(1) OWNER: Name Gerald Narron
Address 200 Helman Ln
City Cotati CA Zip 94928

(2) LOCATION OF WELL (See instructions):
County Sonoma Owner's Well Number 1
Well address if different from above same
Township 6N Range 8W Section F
Distance from cities, roads, railroads, fences, etc. ¼ mile west of Hwy 101 from corner of Gravenstein Hwy and Hwy 101



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [X]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

(5) EQUIPMENT:
Rotary [X] Reverse [ ]
Cable [ ] Air [X]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [X] No [ ] Size Blended
Diameter of bore 14" Packed from 23 ft. to 170 ft.

(7) CASING INSTALLED:
Steel [ ] Plastic [X] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	170	6	160

(8) PERFORATIONS:
Type of perforation or size of screen S&W

From ft.	To ft.	Slot size
40	170	.032"

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 23 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval ft.
Method of sealing Concrete

(10) WATER LEVELS:
Depth of first water, if known 8 ft.
Standing level after well completion 30 ft.

(11) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom? A&K Drilling
Type of test Pump [ ] Bailer [ ] Air Lift [X]
Depth to water at start of test 30 ft. At end of test — ft.
Discharge 15 gal/min after 4 hours Water temperature Cool
Chemical analysis made? Yes [ ] No [X] If yes, by whom?
Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 170 ft. Depth of completed well 170 ft.

from ft.	to	ft.	Formation (Describe by color, character, size or material)
0	-	8	Adobe
8	-	10	Small layer sand
10	-	35	Clay, light brown
35	-	40	Sand, light brown
40	-	64	Clay, light brown
64	-	66	Sand and gravel
66	-	85	Clay
85	-	86	Sand and gravel
86	-	155	Clay, light brown
155	-	160	Sand and gravel
160	-	170	Clay, blue

Work started 11 Sep 19 79 Completed 12 Sep 19 79

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Signed David L. Andreasen (Well Driller)
Name A & K Drilling (Person, firm, or corporation) (Typed or printed)
Address 1708 Putnam Way
City Petaluma CA Zip 94952
License No. 307800 Date of this report 26 Sep 79

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

No. 105281

... of Intent No. ______

... Permit No. or Date 392-73

State Well No. ______

Other Well No. 6N/8W-26

(1) OWNER: Name Charles Badger
Address 170 Helman lane
City Cotati, Calif. Zip ______

(2) LOCATION OF WELL (See instructions):
County Sonoma Owner's Well Number 046-286-03
Well address if different from above Same
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. ______

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☒
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☐
Other ☐

(5) EQUIPMENT:
Rotary ☐ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size fine pea
Diameter of bore 32"
Packed from 20 to 89

(7) CASING INSTALLED:
Steel ☒ Plastic ☐ Concrete ☐

(8) PERFORATIONS:
Type of perforation or size of screen torch

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	89	8 5/8	.156	49	89	1/8 x 6

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 20 ft.
Were strata sealed against pollution? Yes ☐ No ☐ Interval ______ ft.
Method of sealing concrete on pack

(10) WATER LEVELS:
Depth of first water, if known ______ ft.
Standing level after well completion 35 ft.

(11) WELL TESTS:
Was well test made? Yes ☒ No ☐ If yes, by whom? Weeks
Type of test Pump ☐ Bailer ☒ Air lift ☐
Depth to water at start of test 35 ft. At end of test 74 ft.
Discharge 15+ gal/min after 1 1/2 hours Water temperature cool
Chemical analysis made? Yes ☐ No ☒ If yes, by whom? ______
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 89 ft. Depth of completed well 89 ft.

from ft. to ft.	Formation (Describe by color, character, size or material)
0 - 14	brown clay
14 - 18	gravel and brown clay
18 - 22	brown clay
22 - 39	blue clay
39 - 41	brown sand w/water and brown clayee sand
41 - 53	brown clay
53 - 58	brown clay and sand w/water
58 - 70	brown clay and inbed gravel
70 - 89	sand and gravel w/water

Work started 6/27/ 19 78 Completed 6/27/ 19 78

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED Gerald Thompson by Mary Thompson
(Well Driller)

NAME Weeks Drilling & Pump Co.
(Person, firm, or corporation) (Typed or printed)
Address 6100 Sebastopol Rd.
City Sebastopol, Calif. Zip ______
License No. 177681 Date of this report ______

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do Not Fill In

№ 122460

State Well No.
Other Well No. 6N/8W-26F80

046-113-33-8

(1) OWNER: Lorin Nibe 795-0344
Name ~~Lauren Nibe~~
Address 280 Hellman Lane
Cotati, Calif.

(2) LOCATION OF WELL:
County Sonoma Owner's number, if any
Township, Range, and Section 280 Hellman Ln. Cotati
Distance from cities, roads, railroads, etc.

(3) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary ☒
Cable ☐
Other ☐

(6) CASING INSTALLED:
STEEL: OTHER:
SINGLE ☒ DOUBLE ☐

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore (If gravel packed)	From ft.	To ft.
0	213	6	10	12½	0	20
				10	20	213

Size of shoe or well ring: Size of gravel: P
Describe joint Welded

(7) PERFORATIONS OR SCREEN: Torch
Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
60	80	8 rows	down	
160	180	4 rows	around	
200	213	3/16	x 6"	

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes ☒ No ☐ To what depth 20 ft.
Were any strata sealed against pollution? Yes ☐ No ☒ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing Cement

(9) WATER LEVELS:
Depth at which water was first found, if known ft.
Standing level before perforating, if known 53 ft.
Standing level after perforating and developing ft.

(10) WELL TESTS:
Was pump test made? Yes ☐ No ☒ If yes, by whom? bail
Yield: 20 gal./min. with 165 ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☒
Was electric log made of well? Yes ☐ No ☒ If yes, attach copy

(11) WELL LOG:
Total depth 213 ft. Depth of completed well 213 ft.
Formation: Describe by color, character, size of material, and structure

ft. to ft.	
0 - 2	Adobe
2 - 14	Hard Brown Clay
14 - 33	Blue Clay
33 - 46	Soft Brown Clay
46 - 87	Brown clay w/streaks of grav
87 - 126	Brown clay
126 - 129	Gravel w/gray sandy clay
129 - 157	Gray Clay
157 - 173	Brown clay
173 - 213	Brown clay w/streaks of gravel

Work started 9/18/64 19 Completed 9/20/74 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Tri-K Drilling
(Person, firm, or corporation) (Typed or printed)
Address 3637 Sonoma Ave., #159
Santa Rosa, Calif.
[Signed] T. Kugg (Well Driller)
License No. 245571 Dated 24 Sept. 1974

SKETCH LOCATION OF WELL ON REVERSE SIDE

DWR 188 (REV. 9-69)

unplotted

ORIGINAL
File with DWR
CONFIDENTIAL LOG
Water Code Sec. 13752

WATER WELL DRILLERS REPORT

(Sections 7076, 7080, 7031, 7082, Water Code)

THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Do Not Fill In

Nº 15466

State Well No.

Other Well No.

(1) OWNER:
Name DeWayne Strawther
Address 7507 Boris Court
Rohnert Park, California

(2) LOCATION OF WELL:
County Sonoma Owner's number, if any
Township, Range, and Section Helman Avenue
Distance from cities, roads, railroads, etc.

(3) TYPE OF WORK (check):
New Well [X] Deepening [ ] Reconditioning [ ] Destroying [ ]
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic [X] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(5) EQUIPMENT:
Rotary [ ]
Cable [X]
Other [ ]

(6) CASING INSTALLED:
STEEL: OTHER:
SINGLE [X] DOUBLE [ ]

From ft.	To ft.	Diam.	Gage or Wall	If gravel packed: Diameter of Bore	From ft.	To ft.
1	71	8	5/78			

Size of shoe or well rings 8" Size of gravel:
Describe joint

(7) PERFORATIONS OR SCREEN:
Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
51	71	4	4	

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes [X] No [ ] To what depth ft.
Were any strata sealed against pollution? Yes [ ] No [ ] If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing Cementing

(9) WATER LEVELS:
Depth at which water was first found, if known ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing 25 ft.

(10) WELL TESTS: Bail Test
Was pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: 30 gal./min. with 45 ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]
Was electric log made of well? Yes [ ] No [ ] If yes, attach copy

(11) WELL LOG:
Total depth 70 ft. Depth of completed well ft.
Formation: Describe by color, character, size of material, and structure

ft. to		ft.	
1	-	15	Yellow clay
15	-	40	Blue Clay
40	-	50	Yellow sand & small gravel
50	-	55	Yelow sandy clay
55	-	60	Gravel
60	-	70	Sandy yellow clay

Work started 10/12 19 71, Completed 1-/13 19 71

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Les Petersen Drilling & Pump, Inc.
(Person, firm, or corporation) (Typed or printed)
Address 5434 Old Redwood Highway
Santa Rosa, California
[SIGNED] Ken Hansen (Well Driller)
License No. 261084 Dated 10/20/71, 19

SKETCH LOCATION OF WELL ON REVERSE SIDE

DWR 188 (REV. 8/63)

Do Not Fill In

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Nº 59852

State Well No. 6/3-26 1

Other Well No.

(1) OWNER:
Name L C Batkin
Address 3623 Hal[illegible]
[illegible]

(2) LOCATION OF WELL:
County [illegible] Owner's number, if any
same

(3) TYPE OF WORK (check):
New Well ☐ Deepening ☐ Reconditioning ☐ Destroying ☐

(4) PROPOSED USE (check):
Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary ☐
Cable ☐
Other dug by hand

(6) CASING INSTALLED:
STEEL: OTHER:
SINGLE ☐ DOUBLE ☐

If gravel packed

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	From ft.	To ft.

Size of shoe or well ring:
Size of gravel:
Describe joint

(7) PERFORATIONS OR SCREEN:
Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes ☐ No ☐ To what depth ft.
Were any strata sealed against pollution? Yes ☐ No ☐ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing

(9) WATER LEVELS:
Depth to which water was first found, if known ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing ft.

(10) WELL TESTS:
Was pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☐
Was electric log made of well? Yes ☐ No ☐ If yes, attach copy

(11) WELL LOG:
Total depth 52 ft. Depth of completed well ft.
Formation: Describe by color, character, size of material, and structure
ft. to ft.

Lots of iron in water

static level 20'
6-14-72

Elev. 97'

Work started 19 , Completed 19 10

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Olsen + Mallam
(Person, firm, or corporation) (Typed or printed)

Address

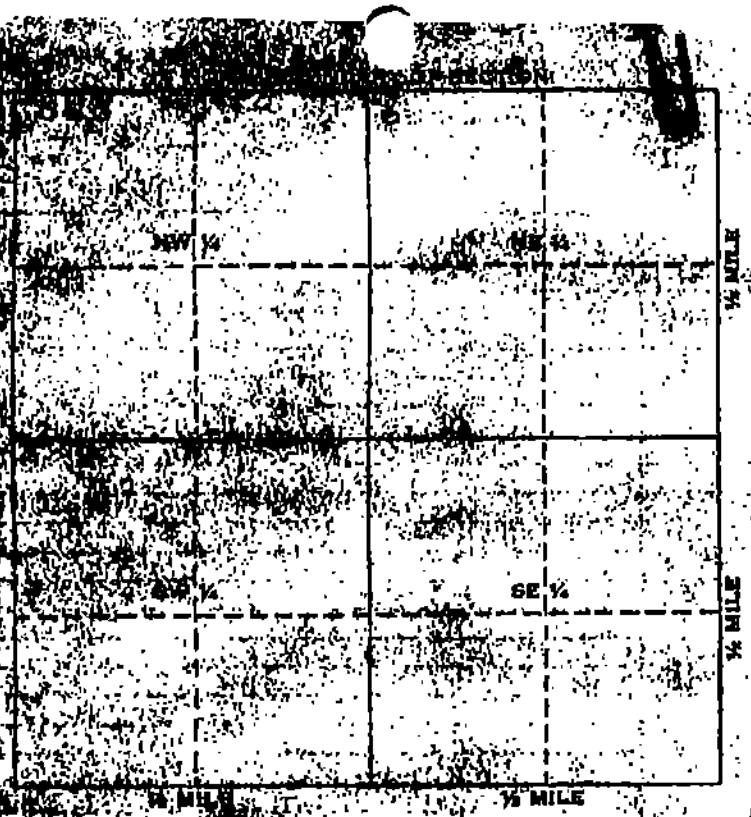
[SIGNED] (Well Driller)

License No. Dated , 19

SKETCH LOCATION OF WELL ON REVERSE SIDE

DWR 188 (REV. 8-68)

59852

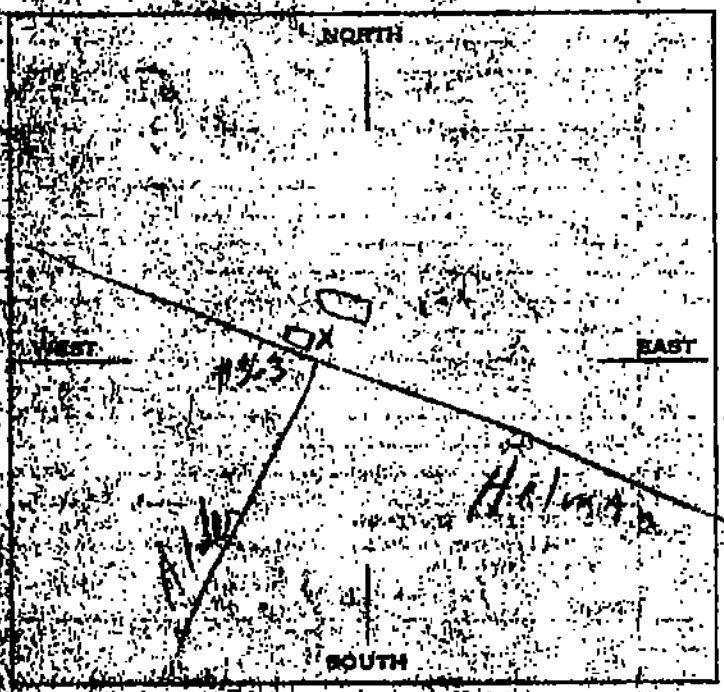


Township _____ N/S

Range _____ E/W

Section No. _____

Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.



Location of well in areas not sectionized.
Sketch roads, railroads, streams, or other features as necessary.
Indicate distances.

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ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in
No. 084387

Notice of Intent No. 173022
Permit No. or Date 652-79

State Well No.
Other Well No. 06N08W26

(1) OWNER: Name Richard Gardner
Address 1583 Rose Ave
City Santa Rosa, Ca Zip 95401

(2) LOCATION OF WELL (See instructions): 144/050/01
County Sonoma Owner's Well Number
Well address if different from above 8239 Gravenstein Hwy So
Township Cotati, Ca Range Section
Distance from cities, roads, railroads, fences, etc.

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☒
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☐
Other ☐

WELL LOCATION SKETCH

(5) EQUIPMENT:
Rotary ☒ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size Pea
Diameter of bore 12 & 8 3/4
Packed from 20 ft. to 221 ft.

(7) CASING INSTALLED:
Steel ☒ Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	221	6 5/8	156

(8) PERFORATIONS: Torch
Type of perforation or size of screen

From ft.	To ft.	Slot size
201	221	3/16x6

Perf: 9 Rows down, 11 Rows across

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 20 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval ft.
Method of sealing Sanitary Well Seal

(10) WATER LEVELS:
Depth of first water, if known ft.
Standing level after well completion ft.

(11) WELL TESTS:
Was well test made? Yes ☒ No ☐ If yes, by whom? Driller
Type of test Pump ☐ Bailer ☒ Air lift ☐
Depth to water at start of test ft. At end of test 40 ft.
Discharge 20 gal/min after 2 hours Water temperature Cool
30 Ft. Draw Down
Was electric log(s) made? Yes ☐ No ☒ If yes, by whom?
Was electric log made? Yes ☐ No ☒ If yes, attach copy to this report

(12) WELL LOG: Total depth 221 ft. Depth of completed well 221 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	9	Brown sand
9	16	Brown sand clay
16	23	Blue clay
23	38	Blue clay
38	54	Brown sand w/Pea gravel
54	74	Brown clay
74	94	Brown sand w/Birdeye gravel
94	118	Brown clay
118	141	Brown sand w/Birdeye gravel
141	148	Brown clay
148	186	Brown sand w/Birdeye gravel
186	221	Blue sand w/gravel

Work started 9/25 19 79 Completed 9/27 19 79

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

SIGNED (Well Driller)
NAME Jim's Pump & Drilling
(Person, firm, or corporation) (Typed or printed)
Address P.O. Box 242
City Graton, Ca. Zip 95444
License No. 306171 Date of this report 10/01/79

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM